ERTEC
ENVIRONMENTAL RESOURCE TECHNOLOGIES

February 20, 2015

CERTIFIED MAIL: 7004-2510-0004-6647-3845

Ms. Khrystie Vázquez
Project Manager
U.S. Environmental Protection Agency
City View Plaza II Building, 7th Floor, Suite 7000
#48 Rd. 165 Km. 1.2
Guaynabo, Puerto Rico 00968-8069

Re: SVE Pulsing Operations Progress Report No. 8, February to August 2014, Corrective Measure Study, Pfizer Pharmaceuticals LLC, Arecibo, Puerto Rico

Dear Ms. Vázquez:

On behalf of Pfizer Pharmaceuticals LLC please find attached the above referenced document in accordance with the requirements of the Revised Proposal for the Installation of Soil Vapor Extraction System (SVE) under a Corrective Measure Study and EPA approval letter of pulsing/cycling procedures dated April 20, 2010.

If you need additional information, please call us at your convenience.

Cordially,

José C. Agrelot, MSCE, PE
Project Officer

c: Ms. Lorna. Rodríguez, PREQB (Certified Mail 7004-2510-0004-6647-4903)
Mr. Adalberto Bosque, USEPA (via electronic mail)
Mr. William G. Gierke, Pfizer, Inc.

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SVE PULSING OPERATIONS PROGRESS REPORT NO. 8
FEBRUARY TO AUGUST 2014
PFIZER PHARMACEUTICALS LLC
ARECIBO, PUERTO RICO

ERTEC JOB NO. 14-5288

Prepared for:

U.S. Environmental Protection Agency
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February 20, 2015

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SVE PULSING OPERATIONS PROGRESS REPORT NO. 8
FEBRUARY TO AUGUST 2014
PFIZER PHARMACEUTICALS LLC
ARECIBO, PUERTO RICO

Date Prepared: February 20, 2015

Period Covered: January 14 through September 4, 2014

Project: Corrective Measure Study
Soil Vapor Extraction Operation & Maintenance
Pfizer Pharmaceuticals LLC

Prepared by: José C. Agrelot, PE, MSCE
Project Director

1.0 INTRODUCTION

This progress report contains a summary of the soil vapor extraction (SVE) pulsing/cycling operations performed during an 8-month period from January 14 through September 4, 2014 at the former Pfizer site in Arecibo, Puerto Rico. A written notification of pulsing off period increase from 1 to 2-months was provided to US Environmental Protection Agency (USEPA) via electronic mail on June 24, 2014 to evaluate if a greater mass removal if obtained through an extended downtime.

This report includes, among others, the following: a description of the work performed, a summary of data collected through the above mentioned period, data interpretation, and recommendations for the operation of the SVE system, if applicable.

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2.0 BACKGROUND

On August 2009, Pfizer requested to EPA the implementation of pulsing/cycling procedures for the SVE system. This letter proposed modifications in SVE operations, to change from continuous mode to a pulsing cycle (one month on - then one off), with an initial test period of 6 months. Vapor samples to be collected after system start up stabilization parameters, and at the end of operation month.

The SVE pulsing/cycling program began on February 22, 2010 after verbal approval was received from EPA during a meeting on January 13, 2010. EPA approval letter was received on April 20, 2010. EPA approved continuation of pulsing/cycling procedures on a letter received on April 7, 2011.

Pulsing/cycling operations have been performed since February 2010 (SVE shutdown to initiate the off cycle period) with semi-annual reports submitted for the following pulsing operational periods.

- March 2010 to August 2010
- September 2010 to February 2011
- March 2011 to November 2011
- December 2011 to June 2012
- July 2012 to December 2012
- January to June 2013
- July to January 2014

3.0 SYSTEM OPERATION

The pulsing operating period (for this reporting period) was performed from extraction wells VMW-1, VMW-2, and VMW-3C. SVE operational and non-operational periods during Cycles 1, 2 and 3 are described below:

Cycle 1: January 14 to February 11, 2014 (SVE off)
February 11 to March 28, 2014 (**SVE on**)

Cycle 2: March 28 to May 5, 2014 (SVE off)
May 5 to June 3, 2014 (**SVE on**)

Cycle 3: June 3 to August 5, 2014 (SVE off)
August 5 to September 4, 2014 (**SVE on**)

Figure 1 presents the location of the SVE system with extraction and vacuum monitoring wells. SVE system extraction and/or vacuum monitoring wells details are summarized in the following table:

Well ID	Well Diameter (inches)	Well Depth (feet bgs)	Screen Interval (feet bgs)	Well Sump Interval (feet bgs)
VMW-1	2	150	145 to 150	NA
VMW-2	2	170	165 to 170	NA
VMW-3C	2	195	190 to 195	NA
SVE-1	4	200	140 to 190	190 to 200

Notes:
BGS Below ground surface
NA Not applicable

Well construction details diagrams for extraction and vacuum monitoring wells is included in **Appendix 1**.

The following data was collected from the system during pulsing/cycling operation:

- Stabilization parameters during system start up;
- Vacuum gauge, flow rate and temperature readings from SVE system and extraction wells during system start up, and at the end of operating cycle;
- Flow rate and temperature readings from stack during system start up, and at the end of operating cycle;
- Organic Vapor Analyzer (OVA) readings after the activated carbon canister during system start up, and at the end of operating cycle.

SVE system measurements were collected with the bleeder valve partially open (as during normal operations) to maintain the blower unit operating within the manufacturer's recommended temperature range.

OVA readings were collected with portable OVA equipped with a photoionization detector (PID). The instrument was calibrated daily. OVA readings were collected directly from the exhaust stack (Stack) sampling port of the SVE system.

3.1 Other Activities

- April 25, 2014 — Site visit for system verification.
- May 5, 2014 — Replacement of bleeder valve and sampling ports at extraction wells (VMW-1, VMW-2, VMW-3C), Inlet, Bleeder, SVE-IN and Stack. Replacement of system temperature gauge.
- May 8, 2014 — Site visit to verify blower temperature and system pressure readings.
- August 5, 2014 — Installation of activated carbon unit.

4.0 SAMPLE COLLECTION ACTIVITIES

Vapor samples collected from each extraction well, inlet sampling port and the exhaust stack during this period were identified as described in the following table:

Date	Extraction Well Sample ID	Inlet Sample ID	Stack Sample ID	Field Duplicate ID	Trip Blank ID
11-Feb-2014	VMW-1-1 VMW-2-1 VMW-3C-1	INLET-1	STACK-1	SVE-A (from sample VMW-1-1)	TB-020114
28-Mar-2014	VMW-1-2 VMW-2-2 VMW-3C-2	INLET-2	STACK-2		
5-May-2014	VMW-1-3 VMW-2-3 VMW-3C-3	INLET-3	STACK-3	SVE-A (from sample VMW-2-3)	TB-050514
3-Jun-2014	VMW-1-4 VMW-2-4 VMW-3C-4	INLET-4	STACK-4		
5-Aug-2014	VMW-1-5 VMW-2-5 VMW-3C-5	INLET-5	STACK-5	SVE-A (from sample VMW-3C-3)	TB-080514
4-Sept-2014	VMW-1-6 VMW-2-6 VMW-3C-6	INLET-6	STACK-6	SVE-A (from sample STACK-6)	TB-090414

Samples obtained during this pulsing/cycling period were collected in Summa canisters, stored and sealed in cardboard box for shipment via FedEx to Test America-Burlington in Vermont. Proper chain-of-custody documentation accompanied the samples to the laboratory. Copy of the chain-of-custodies is included in **Appendix 2**.

5.0 SUMMARY OF LABORATORY ANALYSES

Vapor samples collected during this pulsing/cycling period were analyzed for chloroform, carbon tetrachloride, acetone and methylene chloride following USEPA Compendium Method TO-15, "Determination of Volatile Organic Compounds (VOCs) in Air Collected in Specially-Prepared Canisters and Analyzed by Gas

Chromatography/Mass Spectometry (GC/MS)", January 1997. Laboratory deliverables were equivalent to Contract Laboratory Program Statement of Works (CLP SOWs) for organics.

Sample analytical results were validated according to USEPA Region II Standard Operating Procedures "Volatile Organic Analysis of Ambient Air in Canister" (VCAA010), HW-18 Revision 0, April 1994, the specifications of the analytical method and EPA Region II Standard Operating Procedure HW-6 (Rev. 12). Eden Environmental, LLC from Baton Rouge, Louisiana performed the data validation.

A summary of validated analytical results for air samples collected from extraction wells VMW-1, VMW-2, and VMW-3C, INLET, and exhaust stack during Cycle 1 (February-March 2014), Cycle 2 (May-June 2014) and Cycle 3 (August-September 2014) are provided in **Tables 1**, **2**, and **3**, respectively. Copies of the data validation reports are included in **Appendix 3**.

6.0 SUMMARY OF DATA FROM SVE SYSTEM OPERATION

Table 4 includes a summary of stabilization data obtained during start up of the SVE system on February 11, May 5 and August 5, 2014. Stabilization parameters were collected prior to sampling activities. **Table 5** includes a summary of the operation and monitoring data (vacuum, pressure, flow rate, temperature readings from SVE system and OVA readings from exhaust stack) during extraction procedures on February-March, May and August 2014. **Figure 2** presents the SVE system lay-out.

7.0 DATA REDUCTION AND INTERPRETATION

The SVE system operational time of extraction wells VMW-1, VMW-2 and VMW-3C during Cycles 1, 2 and 3 are described below:

- **Cycle 1**: February 11 to March 28, 2014 / 45 days (1081 hours)
- **Cycle 2**: May 5 to June 3, 2014 / 29 days (695 hours)
- **Cycle 3**: August 5 to September 4, 2014 / 30 days (722 hours)

Each pulsing event or period was monitored on two (2) occasions, one at the initial startup after stabilization and one at the end of the period prior to shutdown. Other site visits performed are described on Section 3.1 of this report. The following sections include a summary of the data collected.

7.1 SVE System Data Calculations

The following parameters were calculated from the data included in **Table 5**: vacuum, average airflow rate and total airflow rate and percent of operation time compared to total operating time for extraction wells VMW-1, VMW-2 and VMW-3C. This data was calculated based on two (2) readings for extraction wells VMW-1, VMW-2, VMW-3C during operating period in February-March 2014, May 2014 and August 2014 as summarized in **Table 5**. The average airflow rate and vacuum was obtained by adding the flow rate and vacuum readings per monitoring and divided by the number of days in which the readings were collected. The total airflow rate was obtained by multiplying the average flow rate by the total operating hours converted to minutes. **Table 5** included the average airflow rate and total airflow rate for extraction wells VMW-1, VMW-2 and VMW-3C. A summary of these parameters for each extraction well is presented below:

CYCLE 1 (February 11 to March 28, 2014)

Operational Cycle	Extraction Well	Average Airflow Rate (ft^3/min)	Total Airflow Rate (ft^3/min)	Average Vacuum Extraction Well (in H_2O)	Average Vacuum Intake Blower (in H_2O)	Operational Time (days)	Percent run time of SVE System (%)
February-March 2014	VMW-1	5.04	326,894	13.5	33	45	100
	VMW-2	6.98	452,723	11.5			
	VMW-3C	7.87	510,448	17.5			

CYCLE 2 (May 5 to June 3, 2014)

Operational Cycle	Extraction Well	Average Airflow Rate (ft^3/min)	Total Airflow Rate (ft^3/min)	Average Vacuum Extraction Well (in H_2O)	Average Vacuum Intake Blower (in H_2O)	Operational Time (days)	Percent run time of SVE System (%)
May 2014	VMW-1	24.43	1,018,731	19.5	37.3	29	100
	VMW-2	23.20	967,440	19.5			
	VMW-3C	27.52	1,147,584	19.5			

CYCLE 3 (August 5 to September 4, 2014)

Operational Cycle	Extraction Well	Average Airflow Rate (ft^3/min)	Total Airflow Rate (ft^3/min)	Average Vacuum Extraction Well (in H_2O)	Average Vacuum Intake Blower (in H_2O)	Operational Time (days)	Percent run time of SVE System (%)
August 2014	VMW-1	13.40	580,488	5.0	38	30	100
	VMW-2	16.18	700,918	12.0			
	VMW-3C	18.79	813,983	21.0			

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7.2 Removal Rate Calculation

The removal and emission rate is calculated using the laboratory results in milligrams per liter (mg/L) in air for each compound detected times the air flow rate. The relation used for this calculation is:

$$R = Q \times C$$

where: R = removal rate (lbs/hr)
Q = air flow rate (ft^3/min; ACFM)
C = compound concentration (mg/L)

As airflow rate and compound concentration are the only two variables in this equation, it was simplified as follows:

$R = ft^3/min \times mg/L \times 60\ min/hr \times 28.32\ L/\ ft^3 \times 1lbs/453.6 \times 10^3$

$R = (ft^3/min \times mg/L)/266.95$

Where: R = removal rate in lbs/hr
ft^3/min = air velocity measured at time of sample collection
mg/L = detected concentration of each compound analyzed
266.95 = constant resulting from the reduction of conversion factors in the equation

The rate of removal in lbs/hr for each compound detected at VMW-1, VMW-2, and VMW-3C for the operating period of February-March 2014, May 2014 and August 2014 is summarized in **Tables 6**, **7**, and **8**, respectively. The rate of removal in lbs/hr for each compound detected at the exhaust stack during this period is summarized in **Table 9**. The resulting data in lbs/hr of compound removed, and emitted to the atmosphere is then multiplied by 24 to obtain the mass in pounds per day (lbs/day).

The daily rate of mass removal and air emissions was calculated based on the laboratory results presented in **Tables 1**, **2**, and **3**. **Tables 6**, **7**, and **8** presents the daily rate of mass removal for each compound from the SVE system during extraction procedures from wells VMW-1, VMW-2, and VMW-3C, respectively. **Table 9** presents the daily rate of emission of VOCs to the atmosphere during operation of wells VMW-1, VMW-2, VMW-3C and SVE-1. These daily rates are calculated for the day samples were collected. A total amount of VOCs emitted from the exhaust stack in lbs/hr and lbs/day is included on the last two columns in **Table 9**.

The amount of VOCs removed from the subsurface through extraction wells VMW-1, VMW-2, and VMW-3C during the operating period of February-March 2014, May 2014 and August 2014 are summarized in the following tables:

FEBRUARY-MARCH 2014 (February 11 to March 28, 2014)

EXTRACTION WELL	Methylene chloride Removal (lbs)	Chloroform Removal (lbs)	CCl_4 Removal (lbs)	Acetone Removal (lbs)	Total Removal (lbs)
VMW-1	0.0	0.1818	7.5497	0.0	7.7315
VMW-2	0.0	0.2315	5.8623	0.0	6.0938
VMW-3C	0.0	0.3520	10.6587	0.0	11.0107
TOTAL VOCs	**0.0**	**0.7653**	**24.0707**	**0.0**	**24.8360**

MAY 2014 (May 5 to June 3, 2014)

EXTRACTION WELL	Methylene chloride Removal (lbs)	Chloroform Removal (lbs)	CCl_4 Removal (lbs)	Acetone Removal (lbs)	Total Removal (lbs)
VMW-1	0.0	0.8239	25.6578	0.0	26.4817
VMW-2	0.0	1.8449	68.7489	0.0	70.5938
VMW-3C	0.0	0.6281	15.0936	0.0	15.7217
TOTAL VOCs	**0.0**	**3.2969**	**109.5003**	**0.0**	**112.7972**

AUGUST 2014 (August 5 to September 4, 2014)

EXTRACTION WELL	Methylene chloride Removal (lbs)	Chloroform Removal (lbs)	CCl_4 Removal (lbs)	Acetone Removal (lbs)	Total Removal (lbs)
VMW-1	0.0	0.1126	4.3392	0.0	4.4518
VMW-2	0.0	0.5081	11.7593	0.0	12.2674
VMW-3C	0.0	0.5659	13.0760	0.0	13.6419
TOTAL VOCs	**0.0**	**1.1866**	**29.1745**	**0.0**	**30.3611**

Approximately 25, 112 and 30 lbs of VOCs were removed (24, 109 and 29 of which was Carbon Tetrachloride) from the subsurface through wells VMW-1, VMW-2 and VMW-3C during the period of February-March 2014, May 2014 and August 2014, respectively. A graph depicting cumulative mass removal in lbs. versus time for total VOCs removed from the SVE system during this period are included in **Appendix 4**.

Emissions from the SVE system are below the limits established by the Puerto Rico Environmental Quality Board (PREQB) at 3 lbs/hr or 15 lbs/day as indicated in **Table 9**.

8.0 SVE SYSTEM DOWNTIME AND CORRECTIVE ACTION

The SVE system was operated on a continuous basis during the pulsing/cycling periods on February-March 2014, May 2014 and August 2014. No water was found at the air/moisture separator during these operation periods.

9.0 SVE PULSING/CYCLING PROGRAM EVALUATION

Table 10 presents a summary of SVE system operation since February 2000 until August 2014. This table includes VOC Mass Removal for each extraction well. Graphs indicating the total VOC monthly extraction for each well and an updated graph showing cumulative mass removed for wells VMW-1, VMW-2 and VMW-3C for steady state

determination are included in **Appendix 4**. Total amount of mass removed per months of operation since February 2010 (SVE shutdown to initiate the off cycle period) from extraction wells VMW-1, VMW-2 and VMW-3C is summarized below:

Operational Month	Mass Removed (lbs)	Reporting Period
April 2010	6.01	March to August 2010
June 2010	35.57	
August 2010	74.53	
October 2010	59.84	September 2010 to February 2011
December 2010	24.41	
February 2011	39.83	
April 2011	50.87	March to November 2011
June 2011	47.32	
August 2011	51.15	
November 2011	27.80	
February 2012	34.28	December 2011 to June 2012
April 2012	18.83	
June 2012	17.44	
August 2012	120.68	July to December 2012
October 2012	34.43	
December 2012	20.09	
February 2013	19.98	January to June 2013
April 2013	29.80	
June 2013	45.80	
August 2013	54.55	July 2013 to January 2014
October 2013	2.66	
Dec 2013 – Jan 2014	1.01	
February-March 2014	24.84	February to August 2014
May 2014	112.79	
August 2014	30.36	
TOTAL	984.87	

Emissions from the SVE system are consistently below the limits of 3 lbs/hr or 15 lbs/day.

The increase in off (down)-time from June 3 to August 5 (63 days – i.e. 2 months) did not result in a substantial increase in mass-removal in comparison to previous events.

9.1 Recommendations

Based on the data obtained during this 8-month period (February to August 2014) the following is recommended:

- Continue with the SVE pulsing/cycling program to accelerate site cleanup – from extraction wells VMW-1, VMW-2 and VMW-3C until stabilization is achieved as per the approved Corrective Measure Plan - including sampling and monitoring at the beginning and end of each operation cycle.
- Continue with a down-time period of approximately one to 1.5 months – given the off-time of 2 months (in June/July 2014) did not result in a substantial increase in mass-removal in comparison to previous one-month down-time periods.

FIGURES

SVE PULSING OPERATIONS PROGRESS REPORT NO. 8
FEBRUARY TO AUGUST 2014
PFIZER PHARMACEUTICALS LLC
ARECIBO, PUERTO RICO

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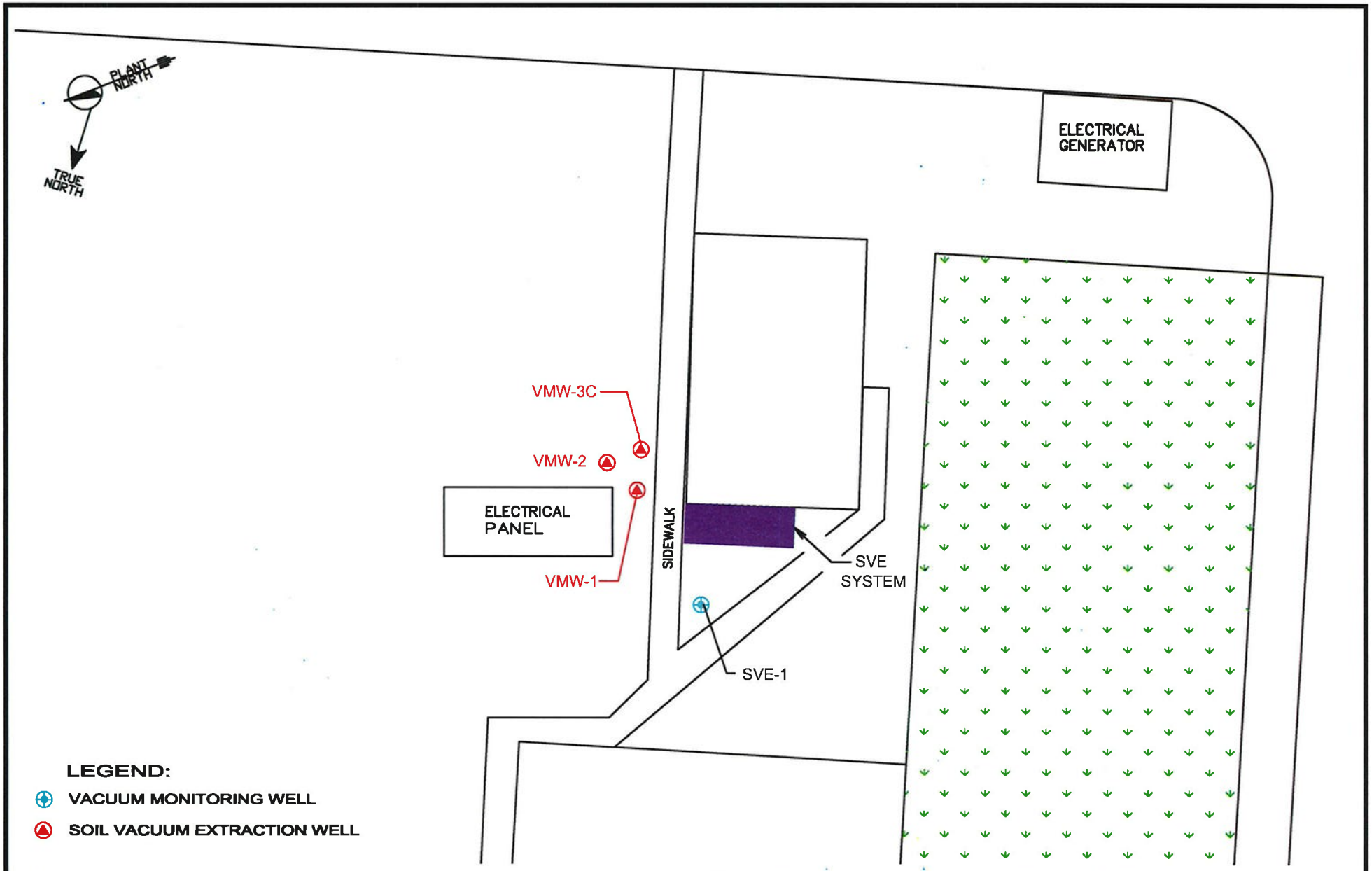

FIGURE 1 - SVE SYSTEM LOCATION
CORRECTIVE MEASURE STUDY
PFIZER PHARMACEUTICALS LLC
ARECIBO, PUERTO RICO

SCALE: NTS	DWG BY: EGN	REV.: WIM	FILE NO.: FIG 1	JOB NO.: E145288

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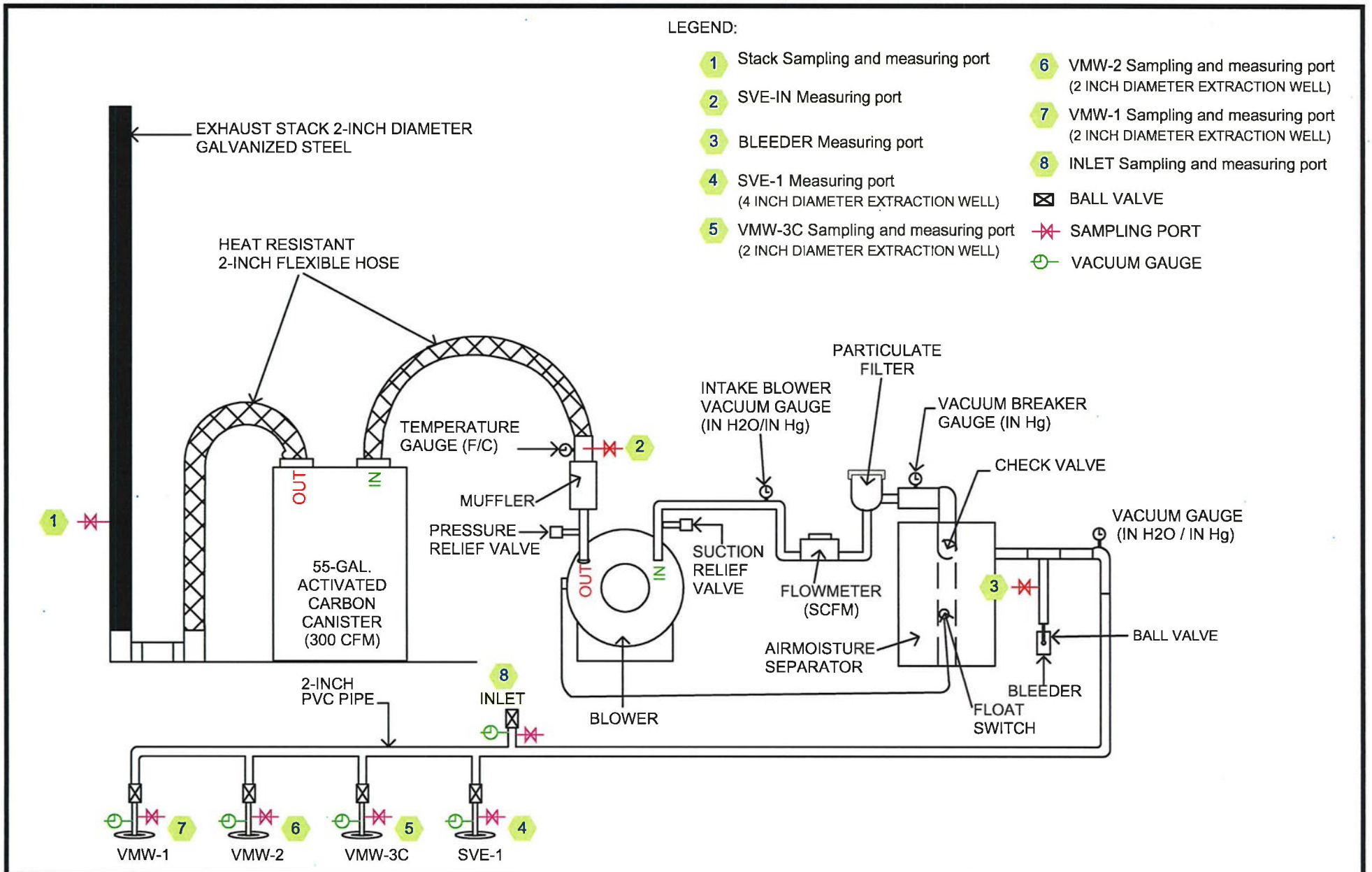

FIGURE 2 - SOIL VAPOR EXTRACTION CURRENT SYSTEM LAY-OUT
CORRECTIVE MEASURE STUDY
PFIZER PHARMACEUTICALS LLC
ARECIBO, PUERTO RICO

SCALE: NTS	DWG BY: EGN	REV.: WIM	FILE NO.: FIG 2	JOB NO.: E145288

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TABLES

SVE PULSING OPERATIONS PROGRESS REPORT NO. 8
FEBRUARY TO AUGUST 2014
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TABLE 1

CYCLE 1: FEBRUARY-MARCH 2014 AIR SAMPLES VALIDATED ANALYTICAL RESULTS
SVE PULSING OPERATIONS - FEBRUARY TO AUGUST 2014
PFIZER PHARMACEUTICALS LLC
ARECIBO, PUERTO RICO

Sample ID	Sample Location	Collection Date (day-mo-yr)	Acetone (ppbv)	Methylene chloride (ppbv)	Chloroform (ppbv)	Carbon tetrachloride (ppbv)
SVE System Start up Samples						
VMW-1-1	Extraction well	11-Feb-14	7300U	730U	**6000**	**630,000**
SVE-A	Field duplicate of sample **VMW-1-1**	11-Feb-14	19000U	1900U	**7100**	**570,000**
VMW-2-1	Extraction well	11-Feb-14	9600U	960U	**7500**	**500,000**
VMW-3C-1	Extraction well	11-Feb-14	11000U	1100U	**14000**	**370,000**
INLET-1	Extraction wells combined sampling port	11-Feb-14	17000U	1700U	**13000**	**360,000**
STACK-1	Stack outlet pipe	11-Feb-14	30U	3.0U	**3.1**	**170**
TB-021114	Trip blank[1/]	11-Feb-14	5.0U	0.50U	0.20U	0.20U
SVE System Shutdown Samples						
VMW-1-2	Extraction well	28-Mar-14	17000U	1700U	**5000**	**75000**
VMW-2-2	Extraction well	28-Mar-14	17000U	1700U	**5200**	**79000**
VMW-3C-2	Extraction well	28-Mar-14	8500U	850U	**2100**	**33000**
INLET-2	Extraction wells combined sampling port.	28-Mar-14	12000U	1200U	**2700**	**41000**
STACK-2	Stack outlet pipe	28-Mar-14	1300U	130U	**330**	**5600**

Notes:

ppbv Parts per billion per volume.

[1/] Trip blank provided by TestAmerica Laboratories.

U The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

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TABLE 2

CYCLE 2: MAY-JUNE 2014 AIR SAMPLES VALIDATED ANALYTICAL RESULTS
SVE PULSING OPERATIONS - FEBRUARY TO AUGUST 2014
PFIZER PHARMACEUTICALS LLC
ARECIBO, PUERTO RICO

Sample ID	Sample Location	Collection Date (day-mo-yr)	Acetone (ppbv)	Methylene chloride (ppbv)	Chloroform (ppbv)	Carbon tetrachloride (ppbv)
SVE System Start up Samples						
VMW-1-3	Extraction well	5-May-14	59000U	5900U	**6100**	**240,000**
VMW-2-3	Extraction well	5-May-14	36000U	3600U	**28000J**	**1,000,000J**
SVE-A	Field duplicate of sample **VMW-2-3**	5-May-14	50000U	5000U	**7800J**	**200,000J**
VMW-3C-3	Extraction well	5-May-14	21000U	2100U	**4900**	**100,000**
INLET-3	Extraction wells combined sampling port	5-May-14	32000U	3200U	**5000**	**130,000**
STACK-3	Stack outlet pipe	5-May-14	1300U	130U	**290**	**4900**
TB-050514	Trip blank[1/]	5-May-14	5.0U	0.50U	0.20U	0.20U
SVE System Shutdown Samples						
VMW-1-4	Extraction well	3-Jun-14	11000U	1100U	**4400**	**57000**
VMW-2-4	Extraction well	3-Jun-14	8700U	870U	**4900**	**64000**
VMW-3C-4	Extraction well	3-Jun-14	7700U	770U	**2400**	**39000**
INLET-4	Extraction wells combined sampling port.	3-Jun-14	7400U	740U	**3300**	**47000**
STACK-4	Stack outlet pipe	3-Jun-14	1900U	190U	**470**	**7400**

Notes:

ppbv Parts per billion per volume.

1/ Trip blank provided by TestAmerica Laboratories.

U The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

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TABLE 3

CYCLE 3: AUGUST-SEPTEMBER 2014 AIR SAMPLES VALIDATED ANALYTICAL RESULTS
SVE PULSING OPERATIONS - FEBRUARY TO AUGUST 2014
PFIZER PHARMACEUTICALS LLC
ARECIBO, PUERTO RICO

Sample ID	Sample Location	Collection Date (day-mo-yr)	Acetone (ppbv)	Methylene chloride (ppbv)	Chloroform (ppbv)	Carbon tetrachloride (ppbv)
SVE System Start up Samples						
VMW-1-5	Extraction well	5-Aug-14	30000U	3000U	**5300**	**230,000**
VMW-2-5	Extraction well	5-Aug-14	21000U	2100U	**8600**	**170,000**
VMW-3C-5	Extraction well	5-Aug-14	12000U	1200U	**5500**	**94,000**
SVE-A	Field duplicate of sample **VMW-3C-3**	5-Aug-14	12000U	1200U	**5100**	**95,000**
INLET-5	Extraction wells combined sampling port	5-Aug-14	15000U	1500U	**6900**	**190,000**
STACK-5	Stack outlet pipe	5-Aug-14	**4.6J**	1.0U	**2.3**	**43**
TB-080514	Trip blank[1/]	5-Aug-14	5.0U	0.50U	0.20U	0.20U
SVE System Shutdown Samples						
VMW-1-6	Extraction well	4-Sep-14	8700U	870U	**5600**	**86,000**
VMW-2-6	Extraction well	4-Sep-14	6700U	670U	**4900**	**72,000**
VMW-3C-6	Extraction well	4-Sep-14	4500U	450U	**2700**	**52,000**
INLET-6	Extraction wells combined sampling port.	4-Sep-14	5700U	570U	**3500**	**63000**
STACK-6	Stack outlet pipe	4-Sep-14	1800U	180U	**460**	**9300**
SVE-A	Field duplicate of sample **STACK-6**	4-Sep-14	810U	81U	**460**	**9600**
TB-090414	Trip blank[1/]	4-Sep-14	5.0U	0.50U	0.20U	0.20U

Notes:

ppbv Parts per billion per volume.

1/ Trip blank provided by TestAmerica Laboratories.

U The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

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TABLE 4

SVE START UP STABILIZATION DATA
SVE PULSING OPERATIONS - FEBRUARY TO AUGUST 2014
PFIZER PHARMACEUTICALS LLC
ARECIBO, PUERTO RICO

CYCLE 1: January 14 to March 28, 2014

Starting Date (day-mo-yr)	SVE On	Reading Time	Extraction Well VMW-1			Reading Time	Extraction Well VMW-2		
			Vacuum (inH_2O/inHg)	Flow Rate (ft/min)	Temp. (°F)		Vacuum (inH_2O/inHg)	Flow Rate (ft/min)	Temp. (°F)
11-Feb-14	10:30	10:45	4 / 0.3	228	92.0	10:48	2 / 0.1	299	91.5
		10:59	4 / 0.3	226	92.2	11:02	2 / 0.1	306	92.2
		11:13	4 / 0.3	229	92.4	11:16	2 / 0.1	310	92.8

Reading Time	Extraction Well VMW-3C			Inlet			Stack		
	Vacuum (inH_2O/inHg)	Flow Rate (ft/min)	Temp. (°F)	Vacuum (inH_2O/inHg)	Flow Rate (ft/min)	Temp. (°F)	Flow Rate (ft/min)	Temp. (°F)	OVA (ppm)
10:51	8 / 0.6	359	86.8	8 / 0.6	362	83.0	5399	100.0	0.0
11:05	8 / 0.6	359	87.2	8 / 0.6	368	83.6	5516	100.3	0.0
11:19	8 / 0.6	362	87.5	8 / 0.6	371	83.8	5536	100.9	0.2

Reading Time	Vacuum Breaker (inHg)	Intake Blower (inH_2O/inHg)	Flow Meter (ACFM)	Blower Temp. (°F)
10:51	1.0	28 / 2.1	117	112.0
11:05	1.0	28 / 2.1	117	114.0
11:19	1.0	28 / 2.1	117	116.0

Notes:

in Hg	Inches of mercury.
in H_2O	Inches of water.
ft/min	Feet per minute.
ACFM	Actual cubic feet per minute.
°F	Degrees Farenheit.
OVA	Organic vapor analyzer.
ppm	Parts per million.

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TABLE 4

SVE START UP STABILIZATION DATA
SVE PULSING OPERATIONS - FEBRUARY TO AUGUST 2014
PFIZER PHARMACEUTICALS LLC
ARECIBO, PUERTO RICO

CYCLE 2: March 28 to June 3, 2014

Starting Date (day-mo-yr)	SVE On	Reading Time	Extraction Well VMW-1			INLET			Vacuum Breaker (inHg)	Intake Blower[1/] (inH_2O/inHg)
			Vacuum (in H_2O/inHg)	Flow Rate (ft/min)	Temp. (°F)	Vacuum (in H_2O/inHg)	Flow Rate (ft/min)	Temp. (°F)		
5-May-14	11:15	11:25	41 / 3.0	1643	92.5	43 / 3.2	3288	92.3	3.4	54 / 4.0
		11:50	41 / 3.0	1584	94.7	43 / 3.2	3162	93.2	3.2	52 / 3.8
		12:20	32 / 2.3	1381	96.2	33 / 2.4	2230	94.8	2.8	48 / 3.5

Reading Time	Flow Meter (ACFM)	Blower Temp. (°F)	Stack		
			Flow Rate (ft/min)	Temp. (°F)	OVA (ppm)
11:25	80	138	4355	102.3	1.7
11:50	90	144	4654	107.1	0.3
12:20	100	140	4816	106.6	0.2

Starting Date (day-mo-yr)	SVE On	Reading Time	Extraction Well VMW-2			INLET			Vacuum Breaker (inHg)	Intake Blower[1/] (inH_2O/inHg)
			Vacuum (in H_2O/inHg)	Flow Rate (ft/min)	Temp. (°F)	Vacuum (in H_2O/inHg)	Flow Rate (ft/min)	Temp. (°F)		
5-May-14	11:15	11:35	42 / 3.1	1587	96.0	43 / 3.2	2721	94.0	3.2	54 / 4.0
		12:00	42 / 3.1	1612	97.6	42 / 3.1	2538	95.6	3.2	52 / 3.8
		12:30	32 / 2.3	1346	100.0	32 / 2.3	2257	95.0	2.8	48 / 3.5

Reading Time	Flow Meter (ACFM)	Blower Temp. (°F)	Stack		
			Flow Rate (ft/min)	Temp. (°F)	OVA (ppm)
11:35	80	142	4498	105.1	0.2
12:00	90	144	4602	107.2	0.4
12:30	100	140	4839	106.3	0.1

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TABLE 4

SVE START UP STABILIZATION DATA
SVE PULSING OPERATIONS - FEBRUARY TO AUGUST 2014
PFIZER PHARMACEUTICALS LLC
ARECIBO, PUERTO RICO

CYCLE 2: March 28 to June 3, 2014 (cont.)

Starting Date (day-mo-yr)	SVE On	Reading Time	Extraction Well VMW-3C			INLET			Vacuum Breaker (inHg)	Intake Blower[1/] (inH_2O/inHg)
			Vacuum ($in H_2O$/inHg)	Flow Rate (ft/min)	Temp. (°F)	Vacuum ($in H_2O$/inHg)	Flow Rate (ft/min)	Temp. (°F)		
5-May-14	11:15	11:45	42 / 3.1	1962	93.2	43 / 3.2	2836	92.7	3.4	54 / 4.0
		12:11	41 / 3.0	1970	93.9	40 / 2.9	2502	95.8	3.2	52 / 3.8
		12:40	32 / 2.3	1745	96.5	32 / 2.3	2236	94.9	2.8	48 / 3.5

Reading Time	Flow Meter (ACFM)	Blower Temp. (°F)	Stack		
			Flow Rate (ft/min)	Temp. (°F)	OVA (ppm)
11:45	80	142	4396	106.0	1.0
12:11	90	144	4675	107.2	0.3
12:40	100	140	4911	106.5	0.2

Notes:

in Hg	Inches of mercury.
in H_2O	Inches of water.
ft/min	Feet per minute.
ACFM	Actual cubic feet per minute.
°F	Degrees Farenheit.
OVA	Organic vapor analyzer.
ppm	Parts per million.
1/	Bleeder valve adjusted to lower intake blower reading below 40 in H_2O.

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TABLE 4

SVE START UP STABILIZATION DATA
SVE PULSING OPERATIONS - FEBRUARY TO AUGUST 2014
PFIZER PHARMACEUTICALS LLC
ARECIBO, PUERTO RICO

CYCLE 3: June 3 to September 4, 2014

Starting Date (day-mo-yr)	SVE On	Reading Time	Extraction Well VMW-1			Reading Time	Extraction Well VMW-2		
			Vacuum (inH_2O/inHg)	Flow Rate (ft/min)	Temp. (°F)		Vacuum (inH_2O/inHg)	Flow Rate (ft/min)	Temp. (°F)
5-Aug-14	11:22	13:00	4 / 0.3	651	90.8	13:07	12 / 0.8	750	90.6
		13:23	4 / 0.3	658	91.2	13:29	12 / 0.8	755	91.0
		13:45	4 / 0.3	654	91.7	13:52	12 / 0.8	757	91.4

Reading Time	Extraction Well VMW-3C			Inlet			Stack		
	Vacuum (inH_2O/inHg)	Flow Rate (ft/min)	Temp. (°F)	Vacuum (inH_2O/inHg)	Flow Rate (ft/min)	Temp. (°F)	Flow Rate (ft/min)	Temp. (°F)	OVA (ppm)
13:13	20 / 1.4	743	93.1	22 / 1.6	826.2	89.1	4210	119.9	0.0
13:35	20 / 1.4	745	93.6	22 / 1.6	819.3	88.9	4205	124.6	0.0
13:58	20 / 1.4	746	94.0	22 / 1.6	832.0	89.7	4213	128.1	0.0

Reading Time	Vacuum Breaker (inHg)	Intake Blower (inH_2O/inHg)	Flow Meter (ACFM)	Blower Temp. (°F)
13:13	2.0	38 / 2.8	108	122.0
13:35	2.0	38 / 2.8	108	130.0
13:58	2.0	38 / 2.8	108	136.0

Notes:

in Hg	Inches of mercury.
in H_2O	Inches of water.
ft/min	Feet per minute.
ACFM	Actual cubic feet per minute.
°F	Degrees Farenheit.
OVA	Organic vapor analyzer.
ppm	Parts per million.

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TABLE 5

SVE OPERATION DATA
SVE PULSING OPERATIONS - FEBRUARY TO AUGUST 2014
PFIZER PHARMACEUTICALS LLC
ARECIBO, PUERTO RICO

CYCLE 1 Operational Period: February 11 to March 28, 2014 (1081 hours/45 days)

DATE (day-mo-yr)	SVE ON	SVE OFF	Reading Time	Bleeder Valve Open	VMW-1 Vacuum Reading		VMW-2 Vacuum Reading		VMW-3C Vacuum Reading		INLET Vacuum Reading		Vacuum Breaker	Intake Blower		SVE-1 Vacuum Reading	SVE-IN Pressure Reading	
					(in H_2O)	(in Hg)	(in H_2O)	(in Hg)	(in H_2O)	(in Hg)	(in H_2O)	(in Hg)	(in Hg)	(in H_2O)	(in Hg)	(in H_2O)	(in H_2O)	(psi)
11-Feb-14	10:30		11:30	Partial	4	0.3	2	0.1	8	0.6	8	0.6	1.0	28	2.1	0.00	16.2	0.59
7-Mar-14	1/		13:41	Partial	6	0.4	0	0.0	6	0.4	9	0.7						
			15:00	Partial	18	1.3	18	1.3	18	1.3	19	1.4						
28-Mar-14		11:45	10:13	Partial	19	1.4	19	1.4	19	1.4	19	1.4	1.8	38	2.8	NA	15.0	0.54
Average vacuum extraction wells:					***13.5***	***1.0***	***11.5***	***0.8***	***17.5***	***1.3***								
Average vacuum inlet:														***33.0***	***2.4***			
Percent operating time for SVE system:				**100%**														

DATE (day-mo-yr)	SVE ON	SVE OFF	Reading Time	Bleeder Valve Open	VMW-1 Flow Rate		VMW-2 Flow Rate		VMW-3C Flow Rate		INLET Flow Rate		Bleeder Valve Flow Rate		SVE Meter Flow Rate	SVE-IN Flow Rate		STACK Flow Rate	
					(ft/min)	(ft^3/min)	(ft/min)	(ft^3/min)	(ft/min)	(ft^3/min)	(ft/min)	(ft^3/min)	(ft/min)	(ft^3/min)	(ACFM)	(ft/min)	(ft^3/min)	(ft/min)	(ft^3/min)
11-Feb-14	10:30		11:30	Partial	231	5.04	320	6.98	361	7.87	380	8.28	5507	120.05	117	5822	126.92	5540	120.77
28-Mar-14		11:45	10:13	Partial	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	110	NA	NA	NA	NA
Average airflow rate extraction wells in ft^3/min:						***5.04***		***6.98***		***7.87***									
Total airflow rate extraction wells in ft^3/min:						***326,894***		***452,723***		***510,448***									

DATE (day-mo-yr)	SVE ON	SVE OFF	Reading Time	Bleeder Valve Open	VMW-1 Temperature		VMW-2 Temperature		VMW-3C Temperature		INLET Temperature		SVE-IN Temperature		Blower Temperature		STACK Temperature		OVA
					(°F)	(°C)	(°F)	(°C)	(°F)	(°C)	(°F)	(°C)	(°F)	(°C)	(°F)	(°C)	(°F)	(°C)	(ppm)
11-Feb-14	10:30		11:30	Partial	92.8	33.8	93.0	34.0	88.1	31.2	84.0	29.0	140.7	60.4	118.0	47.8	100.5	38.1	0.2
28-Mar-14		11:45	10:13	Partial	85.9	30.0	86.7	30.3	87.7	30.9	85.6	29.7	145.3	63.1	120.0	49.0	122.5	50.5	0.0

Notes:

1/ A site visit performed on March 7, 2014 for system verification and bleeder valve adjustment.
OVA readings obtained from extraction wells VMW-1, VMW-2 and VMW-3C and exhaust stack. Readings were 0 ppm.

NA Not available; erratic instrument readings.
in Hg Inches of mercury.
in H_2O Inches of water.
ft/min Feet per minute.
ft^3/min Cubic feet per minute.
ACFM Actual cubic feet per minute.
°F Degrees Farenheit.
°C Degrees Celsius.
OVA Organic vapor analyzer.
ppm Parts per million.

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TABLE 5

SVE OPERATION DATA
SVE PULSING OPERATIONS - FEBRUARY TO AUGUST 2014
PFIZER PHARMACEUTICALS LLC
ARECIBO, PUERTO RICO

CYCLE 2 Operational Period: May 5 to June 3, 2014 (695 hours/29 days)[1/, 2/]

DATE (day-mo-yr)	SVE ON	SVE OFF	Reading Time	Bleeder Valve Open	VMW-1 Vacuum Reading		VMW-2 Vacuum Reading		VMW-3C Vacuum Reading		INLET Vacuum Reading		Vacuum Breaker	Intake Blower		SVE-1 Vacuum Reading	SVE-IN Pressure Reading	
					(in H_2O)	(in Hg)	(in H_2O)	(in Hg)	(in H_2O)	(in Hg)	(in H_2O)	(in Hg)	(in Hg)	(in H_2O)	(in Hg)	(in H_2O)	(in H_2O)	(psi)
5-May-14	11:15		14:00	Partial	18	1.3	18	1.3	18	1.3	18	1.3	2.2	38	2.8	NA	15.0	0.54
8-May-14	3/		14:00											36	2.6			
3-Jun-14		10:10	9:00	Partial	21	1.5	21	1.5	21	1.5	21	1.5	2.0	38	2.8	0.00	15.0	0.54
Average vacuum extraction wells:					***19.5***	***1.4***	***19.5***	***1.4***	***19.5***	***1.4***								
Average vacuum inlet:														***37.3***	***2.7***			
Percent operating time for SVE system:				**100%**														

DATE (day-mo-yr)	SVE ON	SVE OFF	Reading Time	Bleeder Valve Open	VMW-1 Flow Rate		VMW-2 Flow Rate		VMW-3C Flow Rate		INLET Flow Rate		Bleeder Valve Flow Rate		SVE Meter Flow Rate	SVE-IN Flow Rate		STACK Flow Rate	
					(ft/min)	(ft^3/min)	(ft/min)	(ft^3/min)	(ft/min)	(ft^3/min)	(ft/min)	(ft^3/min)	(ft/min)	(ft^3/min)	(ACFM)	(ft/min)	(ft^3/min)	(ft/min)	(ft^3/min)
5-May-14	11:15		14:00	Partial	898	19.58	722	15.74	1152	25.11	1032	22.50	5924	129.14	100	5866	127.88	5551	121.01
3-Jun-14		10:10	9:00	Partial	1343	29.28	1406	30.65	1373	29.93	1513	32.98	OR	OR	110	5758	125.52	5309	115.74
Average airflow rate extraction wells in ft^3/min:						***24.43***		***23.20***		***27.52***									
Total airflow rate extraction wells in ft^3/min:						***1,018,731***		***967,440***		***1,147,584***									

DATE (day-mo-yr)	SVE ON	SVE OFF	Reading Time	Bleeder Valve Open	VMW-1 Temperature		VMW-2 Temperature		VMW-3C Temperature		INLET Temperature		SVE-IN Temperature		Blower Temperature		STACK Temperature		OVA
					(°F)	(°C)	(°F)	(°C)	(°F)	(°C)	(°F)	(°C)	(°F)	(°C)	(°F)	(°C)	(°F)	(°C)	(ppm)
5-May-14	11:15		14:00	Partial	98.2	36.8	98.4	36.9	94.5	34.7	95.3	35.2	139.2	59.6	138.0	58.9	113.1	45.1	0.4
8-May-14	3/		14:00										137.9	58.8	136.0	57.8			
3-Jun-14		10:10	9:00	Partial	96.8	36.0	96.2	35.7	95.3	35.2	93.6	34.2	134.2	56.8	132.0	55.0	128.6	53.7	0.0

Notes:

1/ A site visit performed on April 25, 2014 for SVE system components verification.

2/ Sampling ports at extraction wells VMW-1, VMW-2, VMW-3C, Inlet, Bleeder, SVE-IN and Stack sampling ports; system temperature gauge; and bleeder valve open/close valve replaced on 5/5/2014.

3/ A site visit performed on March 8, 2014 to verify SVE blower temperature and intake blower suction reading.

in Hg Inches of mercury.

in H_2O Inches of water.

ft/min Feet per minute.

ft^3/min Cubic feet per minute.

ACFM Actual cubic feet per minute.

°F Degrees Farenheit.

°C Degrees Celsius.

OVA Organic vapor analyzer.

ppm Parts per million.

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TABLE 5

SVE OPERATION DATA
SVE PULSING OPERATIONS - FEBRUARY TO AUGUST 2014
PFIZER PHARMACEUTICALS LLC
ARECIBO, PUERTO RICO

CYCLE 3 Operational Period: August 5 to September 4, 2014 (722 hours/30 days)[1/]

DATE (day-mo-yr)	SVE ON	SVE OFF	Reading Time	Bleeder Valve Open	VMW-1 Vacuum Reading		VMW-2 Vacuum Reading		VMW-3C Vacuum Reading		INLET Vacuum Reading		Vacuum Breaker	Intake Blower		SVE-1 Vacuum Reading	SVE-IN Pressure Reading	
					(in H_2O)	(in Hg)	(in H_2O)	(in Hg)	(in H_2O)	(in Hg)	(in H_2O)	(in Hg)	(in Hg)	(in H_2O)	(in Hg)	(in H_2O)	(in H_2O)	(psi)
5-Aug-14	11:22		14:10	Partial	4	0.3	12	0.9	20	1.5	22	1.6	2.0	38	2.8	NA	14.0	0.51
4-Sep-14		12:50	10:40	Partial	6	0.4	12	0.9	22	1.6	22	1.6	2.0	38	2.8	0.00	13.0	0.47
Average vacuum extraction wells:					***5.0***	***0.4***	***12.0***	***0.9***	***21.0***	***1.5***								
Average vacuum inlet:														***38.0***	***2.8***			
Percent operating time for SVE system:				**100%**														

DATE (day-mo-yr)	SVE ON	SVE OFF	Reading Time	Bleeder Valve Open	VMW-1 Flow Rate		VMW-2 Flow Rate		VMW-3C Flow Rate		INLET Flow Rate		Bleeder Valve Flow Rate		SVE Meter Flow Rate	SVE-IN Flow Rate		STACK Flow Rate	
					(ft/min)	(ft^3/min)	(ft/min)	(ft^3/min)	(ft/min)	(ft^3/min)	(ft/min)	(ft^3/min)	(ft/min)	(ft^3/min)	(ACFM)	(ft/min)	(ft^3/min)	(ft/min)	(ft^3/min)
5-Aug-14	11:22		14:10	Partial	657	14.32	756	16.48	749	16.33	842	18.36	5238	114.19	108	4878	106.34	4223	92.06
4-Sep-14		12:50	10:40	Partial	572	12.47	728	15.87	975	21.26	1069	23.30	5812	126.70	108	4949	107.89	2840	61.91
Average airflow rate extraction wells in ft^3/min:						***13.40***		***16.18***		***18.79***									
Total airflow rate extraction wells in ft^3/min:						***580,488***		***700,918***		***813,983***									

DATE (day-mo-yr)	SVE ON	SVE OFF	Reading Time	Bleeder Valve Open	VMW-1 Temperature		VMW-2 Temperature		VMW-3C Temperature		INLET Temperature		SVE-IN Temperature		Blower Temperature		STACK Temperature		OVA
					(°F)	(°C)	(°F)	(°C)	(°F)	(°C)	(°F)	(°C)	(°F)	(°C)	(°F)	(°C)	(°F)	(°C)	(ppm)
5-Aug-14	11:22		14:10	Partial	92.0	33.3	91.6	33.1	94.5	34.7	89.9	32.2	160.0	71.1	136.0	58.0	128.0	53.3	0.0
4-Sep-14		12:50	10:40	Partial	88.8	31.6	90.3	32.4	91.3	32.9	88.5	31.4	153.7	67.6	134.0	56.7	121.1	49.5	0.0

Notes:

1/	Carbon canister and particulate filter replaced on August 5, 2014.
in Hg	Inches of mercury.
in H_2O	Inches of water.
ft/min	Feet per minute.
ft^3/min	Cubic feet per minute.
ACFM	Actual cubic feet per minute.
°F	Degrees Farenheit.
°C	Degrees Celsius.
OVA	Organic vapor analyzer.
ppm	Parts per million.

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TABLE 6

CYCLE 1: FEBRUARY-MARCH 2014 REMOVAL RATE FOR EXTRACTION WELLS VMW-1, VMW-2 AND VMW-3C
SVE PULSING OPERATIONS - FEBRUARY TO AUGUST 2014
PFIZER PHARMACEUTICALS LLC
ARECIBO, PUERTO RICO

CYCLE 1: February 11 to March 28, 2014 (1081 hours/45 days)

VMW-1 Sample No.	DATE (day-mo-yr)	VMW-1 Flow Rate (ft^3/min)	METHYLENE CHLORIDE			CHLOROFORM			CARBON TETRACHLORIDE			ACETONE		
			(mg/L)	(lbs/hr)	(lbs/day)	(mg/L)	(lbs/hr)	(lbs/day)	(mg/L)	(lbs/hr)	(lbs/day)	(mg/L)	(lbs/hr)	(lbs/day)
1	11-Feb-14	5.04	0.000000000	0.000000000	***0.000000000***	0.001706508	0.000032219	***0.000773250***	0.230807344	0.004357629	***0.104583092***	0.000000000	0.000000000	***0.000000000***
2	28-Mar-14	5.04[1/]	0.000000000	0.000000000	***0.000000000***	0.007199624	0.000135928	***0.003262283***	0.139108308	0.002626357	***0.063032556***	0.000000000	0.000000000	***0.000000000***
	Total removal rate per compound in lbs/day:				**0.000000000**			**0.004035533**			**0.167615648**			**0.000000000**
	Estimated removed per compound in lbs:				**0.000000**			**0.181767**			**7.549688**			**0.000000**
	Total VOCs removed (lbs) VMW-1:		**7.7315**											
	Average air flow rate:	**5.01 ft^3/min**												
	Total air flow rate:	**326,894 ft^3/min (45 days)**												

VMW-2 Sample No.	DATE (day-mo-yr)	VMW-2 Flow Rate (ft^3/min)	METHYLENE CHLORIDE			CHLOROFORM			CARBON TETRACHLORIDE			ACETONE		
			(mg/L)	(lbs/hr)	(lbs/day)	(mg/L)	(lbs/hr)	(lbs/day)	(mg/L)	(lbs/hr)	(lbs/day)	(mg/L)	(lbs/hr)	(lbs/day)
1	11-Feb-14	6.98	0.000000000	0.000000000	***0.000000000***	0.000710582	0.000018580	***0.000445914***	0.061020365	0.001595513	***0.038292308***	0.000000000	0.000000000	***0.000000000***
2	28-Mar-14	6.98[1/]	0.000000000	0.000000000	***0.000000000***	0.007480203	0.000195586	***0.004694076***	0.146382485	0.003827495	***0.091859876***	0.000000000	0.000000000	***0.000000000***
	Total removal rate per compound in lbs/day:				**0.000000000**			**0.005139990**			**0.130152184**			**0.000000000**
	Estimated removed per compound in lbs:				**0.000000**			**0.231514**			**5.862271**			**0.000000**
	Total VOCs removed (lbs) VMW-2:		**6.0938**											
	Average air flow rate:	**6.98 ft^3/min**												
	Total air flow rate:	**452,723 ft^3/min (45 days)**												

VMW-3C Sample No.	DATE (day-mo-yr)	VMW-3C Flow Rate (ft^3/min)	METHYLENE CHLORIDE			CHLOROFORM			CARBON TETRACHLORIDE			ACETONE		
			(mg/L)	(lbs/hr)	(lbs/day)	(mg/L)	(lbs/hr)	(lbs/day)	(mg/L)	(lbs/hr)	(lbs/day)	(mg/L)	(lbs/hr)	(lbs/day)
1	11-Feb-14	7.87	0.000000000	0.000000000	***0.000000000***	0.008031770	0.000236786	***0.005682864***	0.273424193	0.008060867	***0.193460804***	0.000000000	0.000000000	***0.000000000***
2	28-Mar-14	7.87[1/]	0.000000000	0.000000000	***0.000000000***	0.003014887	0.000088882	***0.002133178***	0.061026389	0.001799130	***0.043179114***	0.000000000	0.000000000	***0.000000000***
	Total removal rate per compound in lbs/day:				**0.000000000**			**0.007816042**			**0.236639918**			**0.000000000**
	Estimated removed per compound in lbs:				**0.000000**			**0.352048**			**10.658656**			**0.000000**
	Total VOCs removed (lbs):		**11.0107**											
	Average air flow rate:	**7.87 ft^3/min**												
	Total air flow rate:	**570,448 ft^3/min (45 days)**												

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Notes:

ft^3/min	Cubic feet per minute.	Formula Calculation:	
mg/L	Milligrams per liter.	R = Q x C/266.95 where:	R = removal rate in lbs/hr or lbs/day
lbs/hr	Pounds per hour.		Q = air flow rate at extraction well in ft^3/min
lbs/day	Pounds per day.		C = compound concentration in mg/L

1/ Flow rates not available on 3/28/2014; previous flow rate reading used for calculation.

TABLE 7

CYCLE 2: MAY 2014 REMOVAL RATE FOR EXTRACTION WELLS VMW-1, VMW-2 AND VMW-3C
SVE PULSING OPERATIONS - FEBRUARY TO AUGUST 2014
PFIZER PHARMACEUTICALS LLC
ARECIBO, PUERTO RICO

CYCLE 1: May 5 to June 3, 2014 (695 hours/29 days)

VMW-1 Sample No.	DATE (day-mo-yr)	VMW-1 Flow Rate (ft^3/min)	METHYLENE CHLORIDE			CHLOROFORM			CARBON TETRACHLORIDE			ACETONE		
			(mg/L)	(lbs/hr)	(lbs/day)	(mg/L)	(lbs/hr)	(lbs/day)	(mg/L)	(lbs/hr)	(lbs/day)	(mg/L)	(lbs/hr)	(lbs/day)
3	5-May-14	19.58	0.000000000	0.000000000	***0.000000000***	0.006872596	0.000504085	***0.012098035***	0.348300621	0.025546830	***0.613123910***	0.000000000	0.000000000	***0.000000000***
4	3-Jun-14	29.28	0.000000000	0.000000000	***0.000000000***	0.006212646	0.000681425	***0.016354189***	0.103669454	0.011370824	***0.272899788***	0.000000000	0.000000000	***0.000000000***
Total removal rate per compound in lbs/day:					**0.000000000**			**0.028452224**			**0.886023698**			**0.000000000**
Estimated removed per compound in lbs:					**0.000000**			**0.823929**			**25.657770**			**0.000000**
Total VOCs removed (lbs) VMW-1:		**26.4817**												
Average air flow rate:	**24.43 ft^3/min**													
Total air flow rate:	**1,018,731 ft^3/min (29 days)**													

VMW-2 Sample No.	DATE (day-mo-yr)	VMW-2 Flow Rate (ft^3/min)	METHYLENE CHLORIDE			CHLOROFORM			CARBON TETRACHLORIDE			ACETONE		
			(mg/L)	(lbs/hr)	(lbs/day)	(mg/L)	(lbs/hr)	(lbs/day)	(mg/L)	(lbs/hr)	(lbs/day)	(mg/L)	(lbs/hr)	(lbs/day)
3	5-May-14	15.74	0.000000000	0.000000000	***0.000000000***	0.031536164	0.001859446	***0.044626714***	1.450784289	0.085541655	***2.052999712***	0.000000000	0.000000000	***0.000000000***
4	3-Jun-14	30.65	0.000000000	0.000000000	***0.000000000***	0.006925352	0.000795138	***0.019083308***	0.116513910	0.013377604	***0.321062493***	0.000000000	0.000000000	***0.000000000***
Total removal rate per compound in lbs/day:					**0.000000000**			**0.063710022**			**2.374062205**			**0.000000000**
Estimated removed per compound in lbs:					**0.000000**			**1.844936**			**68.748885**			**0.000000**
Total VOCs removed (lbs) VMW-2:		**70.5938**												
Average air flow rate:	**23.20 ft^3/min**													
Total air flow rate:	**967,440 ft^3/min (29 days)**													

VMW-3C Sample No.	DATE (day-mo-yr)	VMW-3C Flow Rate (ft^3/min)	METHYLENE CHLORIDE			CHLOROFORM			CARBON TETRACHLORIDE			ACETONE		
			(mg/L)	(lbs/hr)	(lbs/day)	(mg/L)	(lbs/hr)	(lbs/day)	(mg/L)	(lbs/hr)	(lbs/day)	(mg/L)	(lbs/hr)	(lbs/day)
3	5-May-14	25.11	0.000000000	0.000000000	***0.000000000***	0.005558287	0.000522827	***0.012547842***	0.146115714	0.013744018	***0.329856429***	0.000000000	0.000000000	***0.000000000***
4	3-Jun-14	29.93	0.000000000	0.000000000	***0.000000000***	0.003397512	0.000380924	***0.009142165***	0.071115850	0.007973393	***0.191361444***	0.000000000	0.000000000	***0.000000000***
Total removal rate per compound in lbs/day:					**0.000000000**			**0.021690007**			**0.521217873**			**0.000000000**
Estimated removed per compound in lbs:					**0.000000**			**0.628106**			**15.093601**			**0.000000**
Total VOCs removed (lbs):		**15.7217**												
Average air flow rate:	**27.52 ft^3/min**													
Total air flow rate:	**1,147,584 ft^3/min (29 days)**													

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Notes:

ft^3/min	Cubic feet per minute.	Formula Calculation:	
mg/L	Milligrams per liter.	R = Q x C/266.95 where:	R = removal rate in lbs/hr or lbs/day
lbs/hr	Pounds per hour.		Q = air flow rate at extraction well in ft^3/min
lbs/day	Pounds per day.		C = compound concentration in mg/L

TABLE 8

CYCLE 3: AUGUST 2014 REMOVAL RATE FOR EXTRACTION WELLS VMW-1, VMW-2 AND VMW-3C
SVE PULSING OPERATIONS - FEBRUARY TO AUGUST 2014
PFIZER PHARMACEUTICALS LLC
ARECIBO, PUERTO RICO

CYCLE 1: August 5 to September 4, 2014 (722 hours/30 days)

VMW-1 Sample No.	DATE (day-mo-yr)	VMW-1 Flow Rate (ft^3/min)	METHYLENE CHLORIDE			CHLOROFORM			CARBON TETRACHLORIDE			ACETONE		
			(mg/L)	(lbs/hr)	(lbs/day)	(mg/L)	(lbs/hr)	(lbs/day)	(mg/L)	(lbs/hr)	(lbs/day)	(mg/L)	(lbs/hr)	(lbs/day)
5	5-Aug-14	14.32	0.000000000	0.000000000	***0.000000000***	0.001509876	0.000080994	***0.001943863***	0.084400548	0.004527499	***0.108659975***	0.000000000	0.000000000	***0.000000000***
6	4-Sep-14	12.47	0.000000000	0.000000000	***0.000000000***	0.001604244	0.000074939	***0.001798533***	0.031734597	0.001482414	***0.035577936***	0.000000000	0.000000000	***0.000000000***
Total removal rate per compound in lbs/day:					0.000000000			0.003742396			0.144237911			0.000000000
Estimated removed per compound in lbs:					0.000000			0.112584			4.339157			0.000000

Total VOCs removed (lbs) VMW-1: **4.4517**

Average air flow rate: 13.40 ft^3/min

Total air flow rate: 580,488 ft^3/min (30 days)

VMW-2 Sample No.	DATE (day-mo-yr)	VMW-2 Flow Rate (ft^3/min)	METHYLENE CHLORIDE			CHLOROFORM			CARBON TETRACHLORIDE			ACETONE		
			(mg/L)	(lbs/hr)	(lbs/day)	(mg/L)	(lbs/hr)	(lbs/day)	(mg/L)	(lbs/hr)	(lbs/day)	(mg/L)	(lbs/hr)	(lbs/day)
5	5-Aug-14	16.48	0.000000000	0.000000000	***0.000000000***	0.007354765	0.000454042	***0.010897009***	0.187271322	0.011561084	***0.277466016***	0.000000000	0.000000000	***0.000000000***
6	4-Sep-14	15.87	0.000000000	0.000000000	***0.000000000***	0.004200111	0.000249694	***0.005992651***	0.079496708	0.004726026	***0.113424635***	0.000000000	0.000000000	***0.000000000***
Total removal rate per compound in lbs/day:					0.000000000			0.016889660			0.390890651			0.000000000
Estimated removed per compound in lbs:					0.000000			0.508097			11.759294			0.000000

Total VOCs removed (lbs) VMW-2: **12.2674**

Average air flow rate: 16.18 ft^3/min

Total air flow rate: 700,918 ft^3/min (30 days)

VMW-3C Sample No.	DATE (day-mo-yr)	VMW-3C Flow Rate (ft^3/min)	METHYLENE CHLORIDE			CHLOROFORM			CARBON TETRACHLORIDE			ACETONE		
			(mg/L)	(lbs/hr)	(lbs/day)	(mg/L)	(lbs/hr)	(lbs/day)	(mg/L)	(lbs/hr)	(lbs/day)	(mg/L)	(lbs/hr)	(lbs/day)
5	5-Aug-14	16.33	0.000000000	0.000000000	***0.000000000***	0.007798617	0.000477061	***0.011449463***	0.171685964	0.010502460	***0.252059048***	0.000000000	0.000000000	***0.000000000***
6	4-Sep-14	21.26	0.000000000	0.000000000	***0.000000000***	0.003850940	0.000306690	***0.007360567***	0.095534074	0.007608370	***0.182600884***	0.000000000	0.000000000	***0.000000000***
Total removal rate per compound in lbs/day:					0.000000000			0.018810030			0.434659932			0.000000000
Estimated removed per compound in lbs:					0.000000			0.565868			13.076020			0.000000

Total VOCs removed (lbs): **13.6419**

Average air flow rate: 18.79 ft^3/min

Total air flow rate: 813,983 ft^3/min (30 days)

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Notes:

ft^3/min	Cubic feet per minute.	Formula Calculation:	
mg/L	Milligrams per liter.	R = Q x C/266.95 where:	R = removal rate in lbs/hr or lbs/day
lbs/hr	Pounds per hour.		Q = air flow rate at extraction well in ft^3/min
lbs/day	Pounds per day.		C = compound concentration in mg/L

TABLE 9

SVE STACK DISCHARGE
SVE PULSING OPERATIONS - FEBRUARY TO AUGUST 2014
PFIZER PHARMACEUTICALS LLC
ARECIBO, PUERTO RICO

CYCLE 1: February 11 to March 28, 2014 (1081 hours/45 days)

STACK Sample No.	Date (day-mo-yr)	Stack Flow Rate (ft^3/min)	METHYLENE CHLORIDE			CHLOROFORM			CARBON TETRACHLORIDE			ACETONE			Total VOC Discharge[2/]	
			(mg/L)	(lbs/hr)	(lbs/day)	(mg/L)	(lbs/hr)	(lbs/day)	(mg/L)	(lbs/hr)	(lbs/day)	(mg/L)	(lbs/hr)	(lbs/day)	(lbs/hr)	(lbs/day)
1	11-Feb-14	120.77	0.000000000	0.000000000	***0.000000000***	0.000086951	0.000039337	***0.000944092***	0.006142050	0.002778705	***0.066688926***	0.000000000	0.000000000	***0.000000000***	0.002818042	0.067633018
2	28-Mar-14	120.77[1/]	0.000000000	0.000000000	***0.000000000***	0.008901272	0.004026996	***0.096647908***	0.194571027	0.088025259	***2.112606217***	0.000000000	0.000000000	***0.000000000***	0.092052255	2.209254125
Total SVE system discharge per compound in lbs/day:					**0.000000000**			**0.097592000**			**2.179295143**			**0.000000000**		**2.276887143**
Estimated discharge per compound in lbs:					**0.000**			**4.396**			**98.159**			**0.000**		
Total VOCs discharge (lbs):			**102.555**													

CYCLE 2: May 5 to June 3, 2014 (695 hours/29 days)

STACK Sample No.	Date (day-mo-yr)	Stack Flow Rate (ft^3/min)	METHYLENE CHLORIDE			CHLOROFORM			CARBON TETRACHLORIDE			ACETONE			Total VOC Discharge[1/]	
			(mg/L)	(lbs/hr)	(lbs/day)	(mg/L)	(lbs/hr)	(lbs/day)	(mg/L)	(lbs/hr)	(lbs/day)	(mg/L)	(lbs/hr)	(lbs/day)	(lbs/hr)	(lbs/day)
3	5-May-14	121.01	0.000000000	0.000000000	***0.000000000***	0.007955120	0.003606103	***0.086546464***	0.173139771	0.078485273	***1.883646561***	0.000000000	0.000000000	***0.000000000***	0.082091376	1.970193025
4	3-Jun-14	115.74	0.000000000	0.000000000	***0.000000000***	0.012553394	0.005442704	***0.130624890***	0.254593326	0.110382587	***2.649182079***	0.000000000	0.000000000	***0.000000000***	0.115825291	2.779806969
Total SVE system discharge per compound in lbs/day:					**0.000000000**			**0.217171354**			**4.532828640**			**0.000000000**		**4.749999994**
Estimated discharge per compound in lbs:					**0.000**			**6.289**			**131.263**			**0.000**		
Total VOCs discharge (lbs):			**137.552**													

CYCLE 3: August 5 to September 4, 2014 (722 hours/30 days)

STACK Sample No.	Date (day-mo-yr)	Stack Flow Rate (ft^3/min)	METHYLENE CHLORIDE			CHLOROFORM			CARBON TETRACHLORIDE			ACETONE			Total VOC Discharge[1/]	
			(mg/L)	(lbs/hr)	(lbs/day)	(mg/L)	(lbs/hr)	(lbs/day)	(mg/L)	(lbs/hr)	(lbs/day)	(mg/L)	(lbs/hr)	(lbs/day)	(lbs/hr)	(lbs/day)
5	5-Aug-14	92.06	0.000000000	0.000000000	***0.000000000***	0.000061507	0.000021211	***0.000509068***	0.001481207	0.000510807	***0.012259368***	0.000059858	0.000020643	***0.000495424***	0.000552661	0.013263860
6	4-Sep-14	61.91	0.000000000	0.000000000	***0.000000000***	0.012446308	0.002886499	***0.069275976***	0.324128828	0.075170690	***1.804096562***	0.000000000	0.000000000	***0.000000000***	0.078057189	1.873372538
Total SVE system discharge per compound in lbs/day:					**0.000000000**			**0.069785044**			**1.816355930**			**0.000495424**		**1.886636398**
Estimated discharge per compound in lbs:					**0.000**			**2.099**			**54.642**			**0.015**		
Total VOCs discharge (lbs):			**56.756**													

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Notes:

1/	Flow rates not available on 3/28/2014; previous flow rate reading used for calculation.
2/	Puerto Rico Environmental Quality Board emission limits: 3 lbs/hr or 15 lbs/day.
ft^3/min	Cubic feet per minute.
mg/L	Milligrams per liter.
lbs/hr	Pounds per hour.
lbs/day	Pounds per day.

Formula Calculation:

R = Q x C/266.95 where: R = removal rate in lbs/hr or lbs/day
Q = air flow rate in ft^3/min
C = compound concentration in mg/L

TABLE 10

SUMMARY OF SOIL VACUUM EXTRACTION SYSTEM OPERATION - FEBRUARY 2000 TO AUGUST 2014
SVE PULSING OPERATIONS - FEBRUARY TO AUGUST 2014
PFIZER PHARMACEUTICALS LLC
ARECIBO, PUERTO RICO

Report No.	Period (mo/yr)	Extraction Well	Average Airflow Rate (ft^3/min)	Total Airflow Rate (ft^3/min)/days	Average Vacuum Inlet Vacuum Pump (in H_2O)	Average Vacuum Extraction Well (in H_2O)	Percent Operating Time (%)	Operational Time (days)	Operating Time (hours)	VOC Mass Removal (lbs)	Date of Carbon Canister Replacement
1	Feb-00	SVE-1	15.11	522,202	36.1	19	83	24	576	22.2	
2	Mar-00	SVE-1	23.92	930,009.60	35	18	87	27	648	3.6	
3	Apr-00	SVE-1	41.8	953,268	50.3	36	53	16	380	22.38	14-Apr-00
4	May-00	SVE-1	55.96	70,503.30	52	36	3.2	2	21	0.06	
5	Jul-00	SVE-1	4.20	78,372	34	6	42	13	311	19.2	
6	Aug-00	SVE-1	4.20	153,468	34	5	81	25	609	34.2	29-Aug-00
7	Sep-00	SVE-1	8.63	293,593	34	4	80	24	567	14.5	
8	Oct-00	SVE-1	8.19	324,324	34	4	89	27.5	660	4.29	
9	Nov-00	SVE-1	15.68	579,676	34	4	85	25.6	616	0.063	
10	Dec-00	SVE-1	5.16	166,565	34	4	80	22.4	538	0.02	
11	Jan-01	SVE-1	4.55	170,352	34	4	76	26	624	0.02	26-Jan-01
12	Feb-01	SVE-1	4.47	147,510	34	4	82	23	550	0.03	
13	Mar-01	SVE-1	4.83	180,545	34	4	83	26	623	0.09	
14	Apr-01	SVE-1	2.58	93,963	35	5.5	81	25	607	1.75	
15	May-01	SVE-1	2.75	109,890	38	8.2	90	28	666	3.88	
16	Jun-01	SVE-1	3.25	116,805	37.8	8	86	25	599	1.19	14-Jun-01
17	Jul-01	SVE-1	3.02	122,123	38	7.9	88	28	674	0.91	
18	Aug-01	SVE-1	3.00	124,020	37	7.9	94	29	689	0.77	
19	Sep-01	SVE-1	2.60	82,368	32	7.8	79	22	528	0.074	
20	Oct-01	SVE-1	3.06	112,180	26	7.7	77	25.5	611	0.11	11-Oct-01
21	Nov-01	SVE-1	3.14	122,083	26	7.3	90	27	648	0.59	
22	Dec-01	SVE-1	2.98	88,506	26.2	7.8	75	21	495	0.56	
23	Jan-02	SVE-1	2.57	92,520	28.2	9.6	73	25	600	0.91	
24	Feb-02	SVE-1	3.04	101,232	28	9.4	82	23	555	1.68	
25	Mar-02	SVE-1	2.41	79,385	28	9.9	85	23	549	3.84	25-Mar-02
26	Apr-02	SVE-1	2.32	94,934.40	32	17	82	28	682	93	
27	May-02	SVE-1	2.81	109.,421.4	29	16	87	27	649	1.01	9-May-02
28	Jun-02	SVE-1	2.41	80,976	30.7	17	82	23	560	1.24	
29	Jul-02	SVE-1	2.42	30,511	32.8	20	53	9	212	12.9	

TABLE 10

SUMMARY OF SOIL VACUUM EXTRACTION SYSTEM OPERATION - FEBRUARY 2000 TO AUGUST 2014
SVE PULSING OPERATIONS - FEBRUARY TO AUGUST 2014
PFIZER PHARMACEUTICALS LLC
ARECIBO, PUERTO RICO

Report No.	Period (mo/yr)	Extraction Well	Average Airflow Rate (ft^3/min)	Total Airflow Rate (ft^3/min)/days	Average Vacuum Inlet Vacuum Pump (in H_2O)	Average Vacuum Extraction Well (in H_2O)	Percent Operating Time (%)	Operational Time (days)	Operating Time (hours)	VOC Mass Removal (lbs)	Date of Carbon Canister Replacement
Add.	Jul-02	VMW-3C	8.72	52,320	32.4	19.7	100	4	100	5.4	
Add.	Jul-02	VMW-2	2.03	4,019	32.8	20.7	64	1.4	33	0.78	24-Jul-02
Add.	Aug-02	VMW-1	3.51	21,060	30.4	18.3	100	4	100	1.92	14-Aug-02
Add.	Aug & Sep-02	INLET	37.24	234,612	32	19	100	4	105	0.05	
30	Sep-02	VMW-2	3.95	36,735	32	18	50	6.5	155	0.7	25-Sep-02
31	Oct-02	VMW-2	3.82	62,572	31	17	73	11	273	0.9	
		VMW-1	4.36	63,046	31	19	100	10	241	0.52	
32	Nov-02	VMW-1	4.98	46,015	31	19	75	6	154	1.2	8-Nov-02
33	Dec-02	VMW-1	5.77	133,287	32	20	67	16	385	1.8	12-Dec-02
34	Jan-03	VMW-1	5.14	137,546	32	20	48	19	446	2.4	24-Jan-03
35	Feb-03	VMW-1	5.45	166,116	34	22	81	21	508	2.03	
36	Mar-03	VMW-1	3.5	123,270	36	24.6	77	24	587	3.25	3-Mar-03
37	Apr-03	VMW-3C	4.79	156,920	34	20.7	70	23	546	3.97	1-Apr-03 23-Apr-03
38	May-03	VMW-3C	3.74	104,795	32	18	67	19.5	467	2.87	15-May-03
39	Jun-03	VMW-3C	10.49	239,172	31	16	52	16	380	1.42	6-Jun-03 30-Jun-03
40	Jul-03	VMW-3C	3.6	88,776	31	17	55	17	411	0.24	15-Jul-03
											28-Jul-03
41	Aug-03	VMW-3C	4.72	167,654	31	17	71	25	592	0.64	21-Aug-03
42	Sep-03	SVE-1	3.05	69,540	34	22	84	16	380	0.04	5-Sep-03
43	Oct-03	SVE-1	1.36	32,477	34	22	47	17	398	0.6	6-Oct-03 23-Oct-03
44	Nov-03	SVE-1	6.21	107,681	33	20	60	12	289	0.03	11-Nov-03
45	Dec-03	SVE-1	15.08	145,673	33	23	47	7	161	0.02	2-Dec-03
46	Jan & Feb-04	SVE-1	2.18	24,852	32	19	67	8	190	0.02	19-Jan-04
		VMW-1	5.04	81,648	34	22	79	11	270	19.73	
47	Mar-04	VMW-1	9.45	199,017	34	22	56	15	351	5.93	1-Mar-04 17-Mar-04
48	Apr-04	VMW-1	5.78	149,818	34	22	64	18	432	1.37	19-Apr-04

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SUMMARY OF SOIL VACUUM EXTRACTION SYSTEM OPERATION - FEBRUARY 2000 TO AUGUST 2014
SVE PULSING OPERATIONS - FEBRUARY TO AUGUST 2014
PFIZER PHARMACEUTICALS LLC
ARECIBO, PUERTO RICO

Report No.	Period (mo/yr)	Extraction Well	Average Airflow Rate (ft^3/min)	Total Airflow Rate (ft^3/min)/days	Average Vacuum Inlet Vacuum Pump (in H_2O)	Average Vacuum Extraction Well (in H_2O)	Percent Operating Time (%)	Operational Time (days)	Operating Time (hours)	VOC Mass Removal (lbs)	Date of Carbon Canister Replacement
49	May-04	VMW-1	8.09	301,919	33	20	93	26	622	2.85	7-May-04 21-May-04
50	Jun-04	VMW-1	6.76	360,173	29	17	100	37	888	8.73	4-Jun-04 22-Jun-04
51	Jul-04	VMW-1	7.9	297,198	32	20	96	26	627	1.47	12-Jul-04 27-Jul-04
52	Aug-04	VMW-1	4.8	235,008	32	20	100	34	816	5.29	11-Aug-04 27-Aug-04
53	Sep-04	VMW-1	3.54	147,618	27	18	100	29	695	1.22	13-Sep-04 28-Sep-04
54	Oct-04	VMW-1	4.9	196,980	30	18	100	28	670	1.00	13-Oct-04 26-Oct-04
55	Nov-04	VMW-1	7.41	365,461	28	15	100	34	822	6.61	10-Nov-04 23-Nov-04
56	Dec-04	VMW-1	5.72	219,648	30	19	96	27	640	7.11	6-Dec-04 20-Dec-04
57	Jan-05	VMW-1	7.19	342,722	30	19	94	33	794	4.40	4-Jan-05 17-Jan-05
58	Feb-05	VMW-1	6.27	203,524	30	17.5	85	23	541	2.93	10-Feb-05 24-Feb-05
59	Mar-05	VMW-1	7.08	285,667	30	19.5	100	28	672	23.80	10-Mar-05 23-Mar-05
60	Apr-05	VMW-1	8.18	364,932	30	18.5	100	31	744	1.85	8-Apr-05 21-Apr-05
61	May-05	VMW-1	11.17	465,789	30	20	100	29	695	2.09	4-May-05 20-May-05
62	Jun-05	VMW-1	6.65	296,856	31	20	100	31	744	2.85	3-Jun-05 17-Jun-05 27-Jun-05
63	Jul-05	VMW-1	22.07	921,643	31	20	100	29	696	11.17	11-Jul-05 26-Jul-05

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SUMMARY OF SOIL VACUUM EXTRACTION SYSTEM OPERATION - FEBRUARY 2000 TO AUGUST 2014
SVE PULSING OPERATIONS - FEBRUARY TO AUGUST 2014
PFIZER PHARMACEUTICALS LLC
ARECIBO, PUERTO RICO

Report No.	Period (mo/yr)	Extraction Well	Average Airflow Rate (ft^3/min)	Total Airflow Rate (ft^3/min)/days	Average Vacuum Inlet Vacuum Pump (in H_2O)	Average Vacuum Extraction Well (in H_2O)	Percent Operating Time (%)	Operational Time (days)	Operating Time (hours)	VOC Mass Removal (lbs)	Date of Carbon Canister Replacement
64	Aug-05	VMW-1	18.94	792,071	31	19	100	29	697	8.50	10-Aug-05 24-Aug-05
65	Sept & Oct 05 (Extraction Wells Shutdown)	VMW-1	4.63	833	31.5	19	100		3	0.078	
		VMW-2	4.91	589	32	15.5	100		2	0.001	
		VMW-3C	3.27	529.7	31.5	15.5	100		2.7	0.059	
		SVE-1	0.68	123.3	40	27.3	100		3	0.0004	
66	Oct-05	VMW-1	1.27	11,201	29	15.7	100	6	147	0.155	31-Oct-05
		VMW-2	9.63	84,937		11.7				0.081	
		VMW-3C	2.91	25,666		13				0.085	
67	Nov-05	VMW-1	3.82	145,084	29.6	14.6	90	26	633	1.484	16-Nov-05
		VMW-2	3.27	124,195		10.6				0.116	29-Nov-05
		VMW-3C	2.40	91,152		11.8				0.407	
68	Dec-05	VMW-1	5.18	216,317	30	13.8	100	29	696	0.422	7-Dec-05
		VMW-2	14.17	591,739		10				0.063	21-Dec-05
		VMW-3C	8.86	369,994		10.8				0.492	
69	Jan-06	VMW-1	8.99	406,168	30	13	91	31	753	2.332	11-Jan-06
		VMW-2	15.4	695,772		10.3				0.224	25-Jan-06
		VMW-3C	9.81	443,216		10				1.49	
70	Feb-06	VMW-1	7.22	290,244	30	13.8	100	28	670	1.598	8-Feb-06
		VMW-2	3.27	131,454		10.3				0.076	20-Feb-06
		VMW-3C	5.18	208,236		10				0.469	
71	Mar-06	VMW-1	1.91	54,779	30.3	15	100	20	478	0.472	8-Mar-06
		VMW-2	4.09	117,301		13.3				0.097	17-Mar-06
		VMW-3C	2.73	78,296		12				0.347	28-Mar-06
72	Apr-06	VMW-1	2.59	111,733	30.3	14.5	100	30	719	0.917	5-Apr-06
		VMW-2	3.00	129,420		13.5				0.061	18-Apr-06
		VMW-3C	3.55	153,147		11.5				0.664	27-Apr-06
73	May-06	VMW-1	7.57	359,272	30	15.6	100	33	791	2.605	10-May-06
		VMW-2	16.95	804,447		14.0				0.219	22-May-06
		VMW-3C	11.70	555,282		11.6				1.927	

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SVE PULSING OPERATIONS - FEBRUARY TO AUGUST 2014
PFIZER PHARMACEUTICALS LLC
ARECIBO, PUERTO RICO

Report No.	Period (mo/yr)	Extraction Well	Average Airflow Rate (ft^3/min)	Total Airflow Rate (ft^3/min)/days	Average Vacuum Inlet Vacuum Pump (in H_2O)	Average Vacuum Extraction Well (in H_2O)	Percent Operating Time (%)	Operational Time (days)	Operating Time (hours)	VOC Mass Removal (lbs)	Date of Carbon Canister Replacement
74	Jun-06	VMW-1	9.20	372,600	30	15.8	100	28	675	1.95	5-Jun-06
		VMW-2	7.62	308,610		13.8				0.062	19-Jun-06
		VMW-3C	8.96	362,880		12.0				0.858	
75	Jul-06	VMW-1	12.70	563,118	30	15.8	100	31	739	2.326	30-Jun-06
		VMW-2	22.42	994,103		14.0				0.034	11-Jul-06
		VMW-3C	16.39	726,733		12.5				1.000	21-Jul-06
76	Aug-06	VMW-1	9.07	446,244	30	15.8	100	34	820	5.512	2-Aug-06
		VMW-2	11.96	588,432		14.6				0.671	15-Aug-06
		VMW-3C	9.91	487,572		12.6				2.741	25-Aug-06
77	Sep-06	VMW-1	9.45	339,066	30.3	15.5	93	25	598	1.165	7-Sep-06
		VMW-2	10.09	362,029		14.0				0.058	22-Sep-06
		VMW-3C	9.52	341,578		11.5				0.480	
78	Oct-06	VMW-1	9.87	384,338	30.8	16	100	27	649	2.018	3-Oct-06
		VMW-2	9.58	373,045		14.0				0.065	16-Oct-06
		VMW-3C	8.96	348,902		12				0.489	
79	Nov-06	VMW-1	9.80	479,808	30.4	16	100	34	816	5.970	1-Nov-06
		VMW-2	13.85	678,096		14.2				2.237	13-Nov-06
		VMW-3C	10.30	504,288		11.8				7.244	27-Nov-06
80	Dec-06	VMW-1	9.12	369,907	31.5	15	96	28	676	1.531	12-Dec-06
		VMW-2	9.20	373,152		14.0				0.815	26-Dec-06
		VMW-3C	8.04	326,102		12				0.568	
81	Jan-07	VMW-1	8.26	404,410	31.8	15	100	34	816	3.731	8-Jan-07
		VMW-2	7.98	390,701		14.0				2.001	22-Jan-07
		VMW-3C	8.02	392,659		12				1.272	
82	Feb-07	VMW-1	8.21	331,027	32	15	100	28	672	2.344	5-Feb-07
		VMW-2	11.15	449,568		13.5				2.645	19-Feb-07
		VMW-3C	9.33	376,186		12				0.962	
83	Mar-07	VMW-1	11.13	431,399	34	18.4	96	27	646	1.856	5-Mar-07
		VMW-2	10.97	425,197		16.8				0.725	19-Mar-07
		VMW-3C	12.08	468,221		15.4				1.014	

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SVE PULSING OPERATIONS - FEBRUARY TO AUGUST 2014
PFIZER PHARMACEUTICALS LLC
ARECIBO, PUERTO RICO

Report No.	Period (mo/yr)	Extraction Well	Average Airflow Rate (ft^3/min)	Total Airflow Rate (ft^3/min)/days	Average Vacuum Inlet Vacuum Pump (in H_2O)	Average Vacuum Extraction Well (in H_2O)	Percent Operating Time (%)	Operational Time (days)	Operating Time (hours)	VOC Mass Removal (lbs)	Date of Carbon Canister Replacement
84	Apr-07	VMW-1	12.22	493,444	34	18.5	100	28	673	0.003	2-Apr-07
		VMW-2	9.19	371,092		17.0				0.001	16-Apr-07
		VMW-3C	10.25	413,895		16				0.005	
85	May-07	VMW-1	13.45	522,129	34	19.5	93	27	647	0.360	30-Apr-07
		VMW-2	9.22	357,920		17.5				0.103	14-May-07
		VMW-3C	10.95	425,079		16.3				0.379	
86	Jun-07	VMW-1	10.32	505,267	34	20	100	34	816	1.065	1-Jun-07
		VMW-2	10.17	497,923		18.4				0.331	11-Jun-07
		VMW-3C	11.83	579,197		17.2				0.413	25-Jun-07
87	Jul-07	VMW-1	8.28	405,886	34	20	97	34	817	1.959	13-Jul-07
		VMW-2	7.48	366,670		18.8				1.050	24-Jul-07
		VMW-3C	7.56	370,591		17.8				1.030	
88	Aug-07	VMW-1	8.68	375,497	35.3	20	100	30	721	0.5904	7-Aug-07
		VMW-2	10.09	436,493		19.5				0.0003	20-Aug-07
		VMW-3C	9.95	430,437		17.5				0.2948	
89	Sep-07	VMW-1	10.34	385,889	32.8	19	100	26	622	0.3133	5-Sep-07
		VMW-2	10.40	388,128		18.0				0.0704	17-Sep-07
		VMW-3C	12.39	462,395		17				0.2904	
90	Oct-07	VMW-1	8.82	444,528	26.4	17	100	35	840	0.9898	1-Oct-07
		VMW-2	9.73	490,392		15.8				0.6067	16-Oct-07
		VMW-3C	10.22	515,088		14				0.4012	29-Oct-07
91	Nov-07	VMW-1	7.15	71,643	24	10	100	7	167	1/	2/
		VMW-2	6.74	67,535		10.0				0.0600	
		VMW-3C	7.19	72,044		8				0.0400	
92	Dec-07	VMW-1	7.77	67,133	34	18.5	100	6	144	3.6246	27-Dec-07
		VMW-2	8.35	72,144		16.0				1.3622	
		VMW-3C	7.87	67,997		14				0.8652	
93	Jan-08	VMW-1	9.61	443,405	35.4	18.2	100	32	769	1.5562	3-Jan-08
		VMW-2	12.37	570,752		17.6				1.5251	14-Jan-08
		VMW-3C	12.38	571,213		15.4				0.9589	28-Jan-08

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SUMMARY OF SOIL VACUUM EXTRACTION SYSTEM OPERATION - FEBRUARY 2000 TO AUGUST 2014
SVE PULSING OPERATIONS - FEBRUARY TO AUGUST 2014
PFIZER PHARMACEUTICALS LLC
ARECIBO, PUERTO RICO

Report No.	Period (mo/yr)	Extraction Well	Average Airflow Rate (ft^3/min)	Total Airflow Rate (ft^3/min)/days	Average Vacuum Inlet Vacuum Pump (in H_2O)	Average Vacuum Extraction Well (in H_2O)	Percent Operating Time (%)	Operational Time (days)	Operating Time (hours)	VOC Mass Removal (lbs)	Date of Carbon Canister Replacement
94	Feb-08	VMW-1	8.56	356,952	35.5	17	100	29	695	0.0006	11-Feb-08
		VMW-2	12.34	514,578		17.8				0.0010	26-Feb-08
		VMW-3C	8.63	359,871		16				0.0006	
95	Mar-08	VMW-1	11.03	428,185	35.8	14	99.8	27	647	0.0005	10-Mar-08
		VMW-2	10.53	408,774		16.8				0.0005	24-Mar-08
		VMW-3C	10.02	388,976		16				0.0004	
96	Apr-08	VMW-1	9.57	466,825	35.6	15.4	97	34	813	1.0248	7-Apr-08
		VMW-2	8.60	419,508		18.0				0.1213	22-Apr-08
		VMW-3C	8.53	416,093		16.2				0.5483	
97	May-08	VMW-1	11.20	516,768	34.3	15.5	100	32	769	0.8620	5-May-08
		VMW-2	10.52	485,393		18.8				0.2067	19-May-08
		VMW-3C	9.93	458,170		17.5				0.3581	
98	Jun-08	VMW-1	13.19	421,025	34	16	85	22	532	0.2231	6-Jun-08
		VMW-2	15.76	503,059		19				0.0779	19-Jun-08
		VMW-3C	14.14	451,349		17				0.2923	
99	Jul-08	VMW-1	9.41	460,149	34	16	100	34	815	0.5544	1-Jul-08
		VMW-2	8.90	435,210		19				0.1523	15-Jul-08
		VMW-3C	9.01	440,589		17.3				0.6563	29-Jul-08
100	Aug-08	VMW-1	12.71	441,545	34	16	89	24	579	0.000131	11-Aug-08
		VMW-2	12.38	430,081		19				0.000131	25-Aug-08
		VMW-3C	15.76	547,502		17				0.000250	
101	Sep-08	VMW-1	9.08	363,382	34	16	100	28	667	0.000144	9-Sep-08
		VMW-2	9.99	399,800		19.5				0.000156	22-Sep-08
		VMW-3C	9.14	365,783		16.8				0.000066	
102	Oct-08	VMW-1	9.69	500,585	34.4	16	100	36	861	2.365452	7-Oct-08
		VMW-2	14.44	745,970		19.4				0.605816	23-Oct-08
		VMW-3C	11.59	598,739		17.2				1.549567	
103	Nov-08	VMW-1	8.95	318,441	34.3	15	89	25	593	2.454853	3-Nov-08
		VMW-2	11.79	419,488		18.5				0.932874	19-Nov-08
		VMW-3C	11.30	402,054		16.5				1.899250	3/

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PFIZER PHARMACEUTICALS LLC
ARECIBO, PUERTO RICO

Report No.	Period (mo/yr)	Extraction Well	Average Airflow Rate (ft^3/min)	Total Airflow Rate (ft^3/min)/days	Average Vacuum Inlet Vacuum Pump (in H_2O)	Average Vacuum Extraction Well (in H_2O)	Percent Operating Time (%)	Operational Time (days)	Operating Time (hours)	VOC Mass Removal (lbs)	Date of Carbon Canister Replacement
104	Mar-09	VMW-1	13.47	253,775	34.7	12.7	100	13	314	5.393837	10-Mar-09
		VMW-2	13.33	251,137		18.0				3.024644	
		VMW-3C	13.63	256,789		14.7				7.767911	
105	Apr-09	VMW-1	10.64	395,170	35.5	15.5	89.6	26	619	1.854802	7-Apr-09
		VMW-2	10.86	403,340		18.8				0.244926	20-Apr-09
		VMW-3C	13.33	495,076		17				0.858882	
106	May-09	VMW-1	16.18	908,669	34.8	15.8	100	39	936	7.571623	8-May-09
		VMW-2	15.39	864,302		18.2				0.561549	21-May-09
		VMW-3C	18.88	1,060,301		16.4				3.726816	
107	Jun-09	VMW-1	14.55	669,591	34.4	16.8	100	32	767	5.980598	8-Jun-09
		VMW-2	12.57	578,471		19.6				1.009781	22-Jun-09
		VMW-3C	13.96	642,439		18				2.875422	
108	Jul-09	VMW-1	15.71	608,920	35.3	16.5	100	27	646	4.276	7-Jul-09
		VMW-2	14.37	556,981		19.5				0.762	20-Jul-09
		VMW-3C	14.62	566,671		18.3				2.344	
109	Aug-09	VMW-1	10.63	424,137	36	16	99	28	665	2.290572	3-Aug-09
		VMW-2	12.18	485,982		20.0				0.707209	18-Aug-09
		VMW-3C	13.85	552,615		17.8				1.466105	
110	Sep-09	VMW-1	7.62	280,264	35.5	16.0	91	25.5	613	5.478173	1-Sep-09
		VMW-2	9.28	341,318		19.0				0.411593	17-Sep-09
		VMW-3C	9.69	356,398		17.8				1.007658	
111	Oct-09	VMW-1	10.00	503,400	36	16.0	100	35	839	3.261948	1-Oct-09
		VMW-2	12.43	625,726		19.0				1.242479	13-Oct-09
		VMW-3C	11.47	577,400		17.6				2.198758	
112	Nov-09	VMW-1	8.97	452,088	36	14.3	100	35	840	2.853304	2-Nov-09
		VMW-2	11.96	602,784		18.3				0.802025	16-Nov-09
		VMW-3C	13.52	681,408		16.5				2.260381	30-Nov-09
113	Dec-09	VMW-1	9.97	400,794	36.3	14.0	100	28	670	6.407085	14-Dec-09
		VMW-2	10.86	436,572		18.0				6.689507	28-Dec-09
		VMW-3C	11.50	462,300		15.8				5.435659	

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ARECIBO, PUERTO RICO

Report No.	Period (mo/yr)	Extraction Well	Average Airflow Rate (ft^3/min)	Total Airflow Rate (ft^3/min)/days	Average Vacuum Inlet Vacuum Pump (in H_2O)	Average Vacuum Extraction Well (in H_2O)	Percent Operating Time (%)	Operational Time (days)	Operating Time (hours)	VOC Mass Removal (lbs)	Date of Carbon Canister Replacement
114	Jan-10	VMW-1	9.46	380,860	36.3	14.0	100	28	671	2.065491	11-Jan-10
		VMW-2	9.44	380,054		17.3				0.923901	
		VMW-3C	11.53	464,198		14.5				1.111874	
115	Feb-10	VMW-1	9.73	392,314	36.3	15.0	100	28	672	1.886799	8-Feb-10
		VMW-2	15.00	604,800		14.0				1.871269	
		VMW-3C	11.65	469,728		14.8				0.987515	
PULSING/CYCLING PROCEDURES											
1	Apr-10	VMW-1	16.33	752,486	36	17.0	100	32	768	2.6477	4/
		VMW-2	15.01	691,661		13.0				0.5367	
		VMW-3C	13.01	599,501		17.0				2.8294	
	Jun-10	VMW-1	9.32	387,526	36.5	17.0	100	29	693	15.3813	
		VMW-2	10.44	434,095		13.5				11.0887	
		VMW-3C	9.29	386,278		17.0				9.1009	
	Aug-10	VMW-1	15.00	583,200	37.5	18.5	100	27	648	36.4456	
		VMW-2	15.54	604,195		15.0				23.1364	
		VMW-3C	16.30	633,744		19.0				14.9451	
2	Oct-10	VMW-1	12.20	458,232	37.5	18.0	100	26	626	27.9329	6-Oct-10
		VMW-2	14.12	530,347		14.0				18.4070	
		VMW-3C	20.10	754,956		18.0				13.5022	
	Dec-10	VMW-1	6.41	248,836	38	18.5	100	27	647	15.7973	
		VMW-2	7.98	309,784		14.0				5.5114	
		VMW-3C	7.14	277,175		17.5				3.0974	
	Feb-11	VMW-1	5.96	233,155	38	16.0	100	27	652	19.9244	
		VMW-2	5.76	225,331		14.0				12.5025	
		VMW-3C	6.19	242,153		18.0				7.4042	

ERTEC

TABLE 10

SUMMARY OF SOIL VACUUM EXTRACTION SYSTEM OPERATION - FEBRUARY 2000 TO AUGUST 2014
SVE PULSING OPERATIONS - FEBRUARY TO AUGUST 2014
PFIZER PHARMACEUTICALS LLC
ARECIBO, PUERTO RICO

Report No.	Period (mo/yr)	Extraction Well	Average Airflow Rate (ft^3/min)	Total Airflow Rate (ft^3/min)/days	Average Vacuum Inlet Vacuum Pump (in H_2O)	Average Vacuum Extraction Well (in H_2O)	Percent Operating Time (%)	Operational Time (days)	Operating Time (hours)	VOC Mass Removal (lbs)	Date of Carbon Canister Replacement
3	Apr-11	VMW-1	18.39	610,180	37	16.0	100	23	553	33.0169	5/
		VMW-2	14.50	481,110		14.0				9.8245	
		VMW-3C	17.94	595,249		16.0				8.0317	
	Jun-11	VMW-1	15.39	578,048	37	18.0	100	26	626	30.2072	
		VMW-2	12.88	483,773		13.0				7.2812	
		VMW-3C	12.09	454,100		17.5				9.8346	
	Aug-11	VMW-1	16.96	724,531	39	19.0	100	29	712	27.3855	
		VMW-2	17.40	743,328		16.0				16.4732	
		VMW-3C	19.01	812,107		20.0				7.2905	
	Nov-11	VMW-1	8.06	383,978	37	19.0	100	33	794	15.1555	
		VMW-2	7.94	378,262		16.0				7.8081	
		VMW-3C	6.19	294,892		19.0				4.8375	
4	Jan-Feb 2012	VMW-1	7.78	414,985	31.5	14.0	100	37	889	22.8349	23-Jan-12 6/
		VMW-2	7.51	400,583		10.0				4.7724	
		VMW-3C	7.06	376,580		14.0				6.6713	
	Apr-12	VMW-1	9.60	374,400	33.5	16.0	100	27	650	11.3448	7/
		VMW-2	9.32	363,480		10.0				2.4469	
		VMW-3C	9.54	372,060		16.0				5.0372	
	Jun-12	VMW-1	8.46	306,590	34.5	18.0	100	25	604	10.0404	
		VMW-2	6.60	239,184		13.5				3.2279	
		VMW-3C	9.46	342,830		19.0				4.1748	
5	Aug-12	VMW-1	7.78	414,985	36	16.0	100	30	721	22.8349	2-Oct-12
		VMW-2	7.51	400,583		13.5				4.7724	
		VMW-3C	7.06	376,580		19.0				6.6713	
	Oct-12	VMW-1	9.60	374,400	33.5	16.0	100	27	650	11.3448	
		VMW-2	9.32	363,480		10.0				2.4469	
		VMW-3C	9.54	372,060		16.0				5.0372	
	Dec-12	VMW-1	8.46	306,590	34.5	18.0	100	25	604	10.0404	
		VMW-2	6.60	239,184		13.5				3.2279	
		VMW-3C	9.46	342,830		19.0				4.1748	

TABLE 10

SUMMARY OF SOIL VACUUM EXTRACTION SYSTEM OPERATION - FEBRUARY 2000 TO AUGUST 2014
SVE PULSING OPERATIONS - FEBRUARY TO AUGUST 2014
PFIZER PHARMACEUTICALS LLC
ARECIBO, PUERTO RICO

Report No.	Period (mo/yr)	Extraction Well	Average Airflow Rate (ft^3/min)	Total Airflow Rate (ft^3/min)/days	Average Vacuum Inlet Vacuum Pump (in H_2O)	Average Vacuum Extraction Well (in H_2O)	Percent Operating Time (%)	Operational Time (days)	Operating Time (hours)	VOC Mass Removal (lbs)	Date of Carbon Canister Replacement
6	Feb-13	VMW-1	9.37	323,827	38	14.0	100	24	576	8.0138	3-Apr-13
		VMW-2	9.28	320,717		10.0				4.9841	
		VMW-3C	8.18	282,701		16.0				6.9808	
	Apr-13	VMW-1	10.48	409,349	36	14.0	100	27	651	10.4615	
		VMW-2	21.04	821,822		10.0				8.9647	
		VMW-3C	15.72	614,023		16.0				10.3771	
	Jun-13	VMW-1	23.33	834,281	35	15.5	100	25	596	22.7551	
		VMW-2	14.13	505,289		13.5				10.1854	
		VMW-3C	17.91	640,462		16.5				12.8600	
7	Aug-13	VMW-1	16.80	750,960	35	15.0	100	31	745	18.6665	6-Aug-13
		VMW-2	23.05	1,030,335		14.0				18.0805	
		VMW-3C	23.20	1,037,040		18.0				17.8033	
	Oct-13	SVE-1	22.28	896,993	31	22.0	100	28	671	2.6588	8/
	Dec-13/Jan-14	SVE-1	13.11	604,895	30	15.0	100	32	769	1.0149	
8	Feb-14/Mar-14	VMW-1	5.04	326,894	33	13.5	100	45	1081	7.7315	9/
		VMW-2	6.98	452,723		11.5				6.0938	
		VMW-3C	7.87	510,448		17.5				11.0107	
	May-14	VMW-1	24.43	1,018,731	37	19.5	100	29	695	26.4817	
		VMW-2	23.20	967,440		19.5				70.5938	
		VMW-3C	27.52	1,147,584		19.5				15.7217	
	Aug-14	VMW-1	13.40	580,488	38	5.0	100	30	722	4.4517	5-Aug-14
		VMW-2	16.18	700,918		12.0				12.2674	
		VMW-3C	18.79	813,983		21.0				13.6419	

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TABLE 10

SUMMARY OF SOIL VACUUM EXTRACTION SYSTEM OPERATION - FEBRUARY 2000 TO AUGUST 2014
SVE PULSING OPERATIONS - FEBRUARY TO AUGUST 2014
PFIZER PHARMACEUTICALS LLC
ARECIBO, PUERTO RICO

Notes:

1/ The laboratory reported that sample VMW-1-108 collected from extraction well VMW-1 was received broken and no analysis was performed.

2/ Moisture separator found broken during November 5, 2007 sampling activities. SVE system turn off until moisture separator replacement on December 21, 2007.

3/ On December 1, 2008 the SVE vacuum blower was reported by Pfizer personnel to be out of operation. A new blower unit was installed on February 28, 2009. The SVE system operation was resumed on March 10, 2009 after SVE systems check (blower motor rotation, electrical, pipelines, joints, vacuum gauges, flow meter, moisture separator and stack), and stabilization parameters and vapor samples from extraction wells and stack.

4/ SVE pulsing/cycling program began on February 22, 2010 after EPA approval.

5/ Clean up of vacuum extraction wells VMW-2 and VMW-3C performed on August 1, 2 and 9, 2011. Air filter unit and nipple replaced on August 12, 2011. Activated carbon unit removed from SVE system on August 10, 2011 based on historical data below 3 lbs/hr or 15 lbs/day. SVE found off during September 9, 2011 site visit for monitoring and sampling activities due to electrical power failure on September 8, 2011. SVE system did not start on this date. After system verification during September 2011, it was determined that electrical system and blower motor unit was damaged. Resume SVE operation on October 27, 2011 after repairs of SVE electrical system and re-installation of repaired blower unit.

6/ Start up SVE operation on January 23, 2012 after carbon unit installation.

7/ SVE system check on May 23, 2012 after electrical utilities relocation.

8/ Extraction procedures from well SVE-1 starting on October 7, 2013 until January 2014.

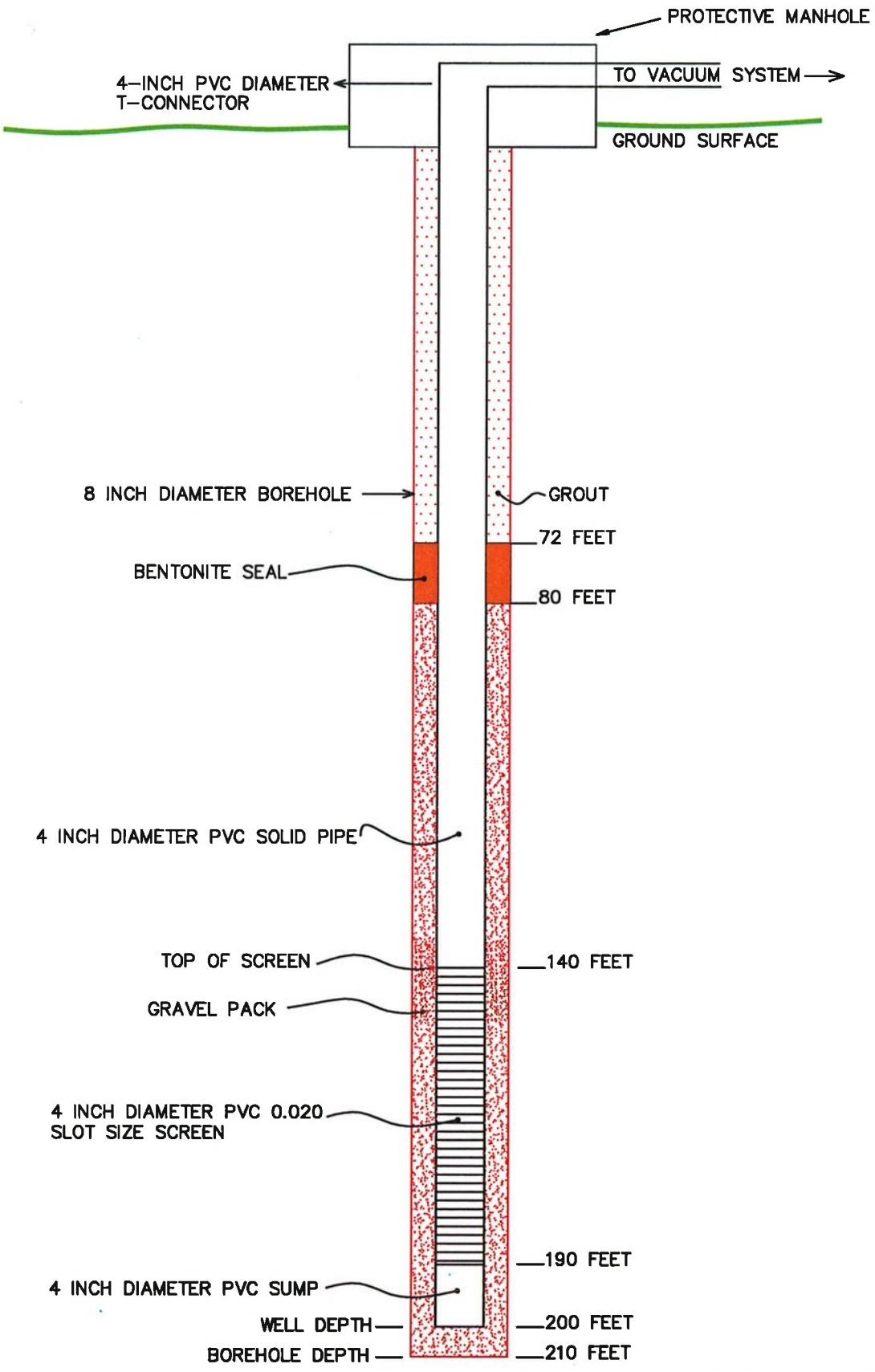
9/ Pulsing procedures on 2-months off basis after May 2014. Sampling ports at extraction wells VMW-1, VMW-2, VMW-3C, Inlet, Bleeder, SVE-IN and Stack sampling ports; system temperature gauge; and bleeder valve open/close valve replaced on 5/5/2014.

APPENDIX 1

EXTRACTION AND VACUUM MONITORING WELLS CONSTRUCTION DETAIL

SVE PULSING OPERATIONS PROGRESS REPORT NO. 8
FEBRUARY TO AUGUST 2014
PFIZER PHARMACEUTICALS LLC
ARECIBO, PUERTO RICO

ERTEC

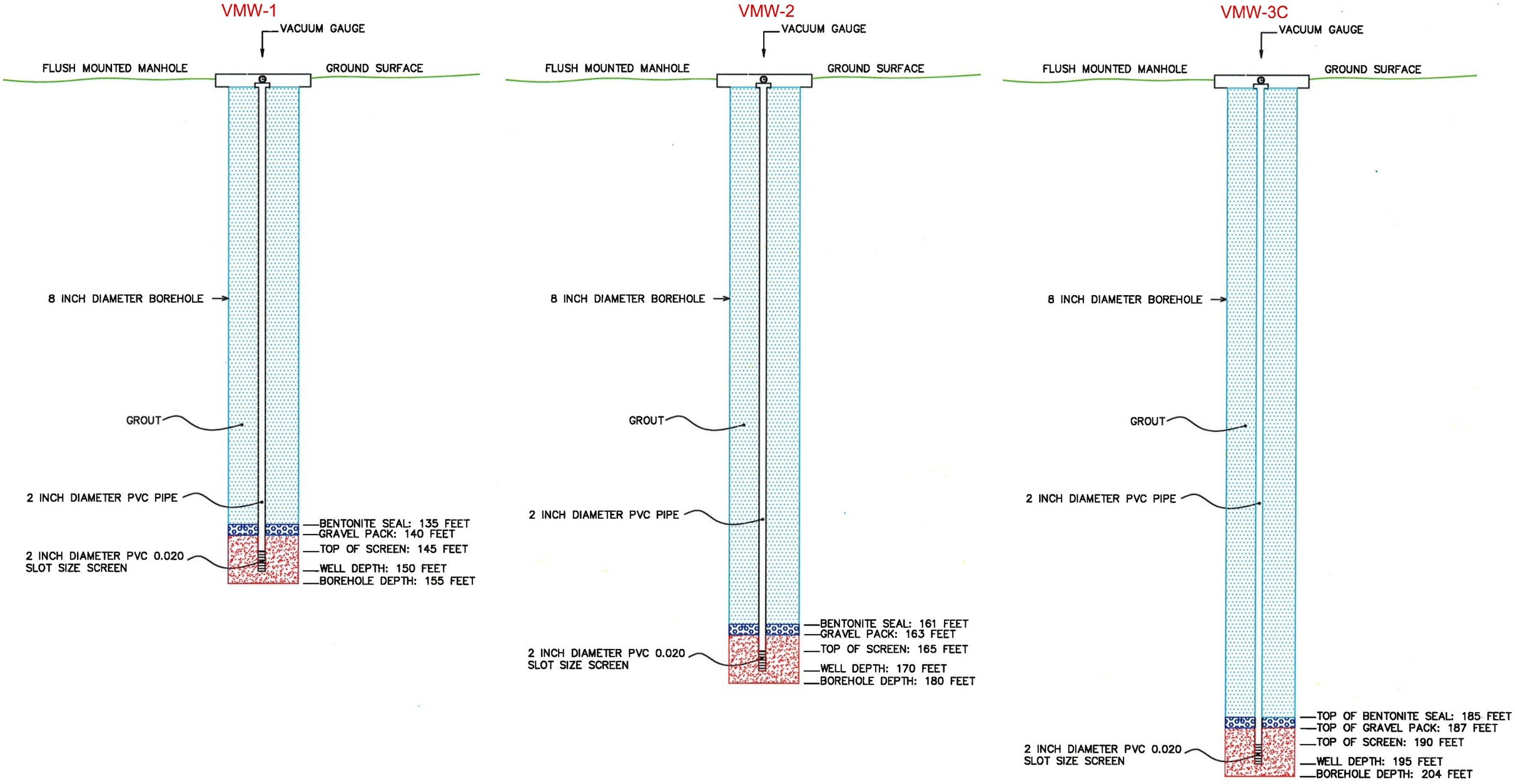


SCALE: NTS	
REV.: WM	
FILE: FIG	
DWG. BY: EGN	
JOB: E145288	

WELL CONSTRUCTION DETAIL
CORRECTIVE MEASURE STUDY
PFIZER PHARMACEUTICALS LLC
ARECIBO, PUERTO RICO

ERTEC
ENVIRONMENTAL RESOURCE TECHNOLOGIES

D:\ERTEC NEW ARCHIVE BY EDH\9-PFIZER ARECIBO - UPJOHN\14-5288\WELL CONSTRUCTION DETAIL (FORMER FIG 4-2).dwg, 2/20/2015 2:11:46 PM, iR-ADV C7055



D:\ERTEC NEW ARCHIVE BY EDH\9-PFIZER ARECIBO - UPJOHN\14-5288\FIGURE VMW (FORMER FIG 4-3).dwg, 2/20/2015 2:17:42 PM, iR-ADV C7055

VMW-1, VMW-2 AND VMW-3C WELLS CONSTRUCTION DETAILS
CORRECTIVE MEASURE STUDY
PFIZER PHARMACEUTICALS LLC
ARECIBO, PUERTO RICO

DATE: 07/24/2013	SCALE: NTS	DRAWN BY: EGN	REV.: WIM	FILE: FIGURE	JOB: E145288

ERTEC
ENVIRONMENTAL RESOURCE TECHNOLOGIES

APPENDIX 2

CHAIN OF CUSTODY DOCUMENTATION

SVE PULSING OPERATIONS PROGRESS REPORT NO. 8
FEBRUARY TO AUGUST 2014
PFIZER PHARMACEUTICALS LLC
ARECIBO, PUERTO RICO

ERTEC

TestAmerica Burlington
30 Community Drive
Suite 11
South Burlington, VT 05403
phone 802-660-1990 fax 802-660-1919

Canister Samples Chain of Custody Record

TestAmerica Analytical Testing Corp. assumes no liability with respect to the collection and shipment of these samples.

Client Contact Information	Project Manager: Wanda I. Morales	Samples Collected By: Roberto De Jesus / ERTEC	1 of 2 COCs
Company: ERTEC, PSC	Phone: (787) 792-8902		
Address: Armour St. AS Rpto. Laurean	Email: wmorales@ertecpr.com		
City/State/Zip RPO Ppedras PR 00978			
Phone: (787) 792-8902	Site Contact: Wanda I. Morales		
FAX: (787) 783-5555	TA Contact: Don Davidoff		
Project Name: Pfizer. Arecibo SVE	**Analysis Turnaround Time**		
Site: Arecibo, PR	Standard (Specify) ✓		
PO # 13-5072	Rush (Specify)		

Sample Identification	Sample Date(s)	Time Start	Time Stop	Canister Vacuum in Field, "Hg (Start)	Canister Vacuum in Field, 'Hg (Stop)	Flow Controller ID	Canister ID	TO-15	MA-APH	EPA 3C	EPA 25C	ASTM D-1946	Other (Please specify in notes section)	Sample Type	Indoor Air	Ambient Air	Soil Gas	Landfill Gas	Other (Please specify in notes section)
VMW-1-1	021114	1205	/	/	/	/	2819	X									X		
~~VMW~~ RJB 02/11/14 SVE-A	021114	1209	/	/	/	/	3410	X									X		
VMW-2-1	021114	1217	/	/	/	/	5643	X									X		
VMW-3C-1	021114	1225	/	/	/	/	3313	X									X		
INLET-1	021114	1235	/	/	/	/	5407	X									X		
STACK-1	021114	1244	/	/	/	/	5068	X									X		

Temperature (Fahrenheit)			
	Interior	Ambient	
Start			
Stop			

Pressure (inches of Hg)			
	Interior	Ambient	
Start			
Stop			

200-20895 COC

Special Instructions/QC Requirements & Comments:

Samples Shipped by: Roberto De Jesus / ~~Roberto~~	Date/Time: 02/11/14 @ 1530	Samples Received by: 02/11/14 – FedEx @ 1530
Samples Relinquished by:	Date/Time:	Received by:
Relinquished by:	Date/Time: 2/12/14 1100	Received by: Matt Z TASK

Lab Use Only **Shipper Name:** **Opened by:** **Condition:**

TestAmerica Burlington
30 Community Drive
Suite 11
South Burlington, VT 05403
phone 802-660-1990 fax 802-660-1919

Canister Samples Chain of Custody Record

TestAmerica Analytical Testing Corp. assumes no liability with respect to the collection and shipment of these samples.

Client Contact Information	Project Manager: Wanda I. Morales	Samples Collected By: Roberto de Jesús / ERTEC	2 of 2 COCs
Company: ERTEC, PSC	Phone: (787) 792-8902		
Address: Amador St. A5 Rpto. Candelaria	Email: wmorales@ertecpr.com		
City/State/Zip RPO Pedrales PR00978			
Phone: (787) 792-8902	Site Contact: Wanda I. Morales		
FAX: (787) 783-5555	TA Contact: Don Daneski		
Project Name: Pfizer-Arecibo SVE	**Analysis Turnaround Time**		
Site: Arecibo, PR	Standard (Specify) ✓		
PO #	Rush (Specify)		

Sample Identification	Sample Date(s)	Time Start	Time Stop	Canister Vacuum in Field, "Hg (Start)	Canister Vacuum in Field, "Hg (Stop)	Flow Controller ID	Canister ID	TO-15	MA-APH	EPA 3C	EPA 25C	ASTM D-1946	Other (Please specify in notes section)	Sample Type	Indoor Air	Ambient Air	Soil Gas	Landfill Gas	Other (Please specify in notes section)
TB 021114	021114	—	—	—	—	—	4551	X											X

RJB 02/11/14 RJB 02/11/14 RJB 02/11/14

Temperature (Fahrenheit)	Interior	Ambient	
Start			
Stop			

Pressure (inches of Hg)	Interior	Ambient	
Start			
Stop			

Special Instructions/QC Requirements & Comments:
Trip Blank 02/11/14.

Samples Shipped by: Roberto de Jesús / [illegible]	Date/Time: 02/11/14 @ 1530	Samples Received by: 021114 — FedEx @ 1530
Samples Relinquished by:	Date/Time:	Received by:
Relinquished by:	Date/Time: 2/12/14 1100	Received by: Scott — TAB VSL

Lab Use Only **Shipper Name:** **Opened by:** **Condition:**

TestAmerica Burlington
30 Community Drive
Suite 11
South Burlington, VT 05403
phone 802-660-1990 fax 802-660-1919

Canister Samples Chain of Custody Record

TestAmerica Analytical Testing Corp. assumes no liability with respect to the collection and shipment of these samples.

Client Contact Information	Project Manager: Wendy Marshall	Samples Collected By: Kristen L Rivers
Company: Entec	Phone: 787 722-7882	1 of 1 COCs
Address: Amur A-5 Reparto Montana	Email:	
City/State/Zip: Rio Piedras, PR 00921		
Phone: 787 725-8802	Site Contact: Kristen L Rivers	
FAX: 787 725-8335	TA Contact: Joe Skwierski	
Project Name: Pfizer Arecibo SVE	**Analysis Turnaround Time**	
Site: Arecibo PR	Standard (Specify) ✓	
PO #	Rush (Specify)	

Sample Identification	Sample Date(s)	Time Start	Time Stop	Canister Vacuum in Field, "Hg (Start)	Canister Vacuum in Field, "Hg (Stop)	Flow Controller ID	Canister ID	TO-15 (Full Scan, Chlorinated, Methyl Chloride)	MA-APH	EPA 3C	EPA 25C	ASTM D-1946	Other (Please specify in notes section)	Sample Type	Indoor Air	Ambient Air	Soil Gas	Landfill Gas	Other (Please specify in notes section)
VMW-1-2	3/28/14	1031	1031	-30.0			4779	X											
VMW-2-2	3/28/14	1056	1056	-30.1			5694	X											
VMW-3C-2	3/28/14	1104	1104	-30.0			4371	X											
INLET-2	3/28/14	1108	1108	-30.0			5716	X											
STACK-2	3/28/14	1115	1115	-30.0			5725	X											

Temperature (Fahrenheit)	Interior	Ambient	
Start			
Stop			

Pressure (inches of Hg)	Interior	Ambient	
Start			
Stop			

200-21630 Chain of Custody

Special Instructions/QC Requirements & Comments:

Samples Shipped by:	Date/Time:	Samples Received by:	3/29/14 1035 FAB/2
Samples Relinquished by:	Date/Time: 3/28/14 1600	Received by:	
Relinquished by:	Date/Time:	Received by:	

Lab Use Only Shipper Name: Opened by: Condition:

Chain of Custody Record

Sampler ID _____

Temperature on Receipt _____

Drinking Water? Yes ☐ No ☐

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TAL-4124-280 (0508)

Client	Project Manager	Date	Chain of Custody Number
ERTEC	Wanda I. Morales	050514	158158
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page 1 of 1**
Amar A-5 Apto. Landrau	787-792-8902		
City / State / Zip Code	**Site Contact**	**Lab Contact**	
Rio Piedras / P.R. / 00921	—	Don Dawicki	
Project Name and Location (State)	**Carrier/Waybill Number**		
Pfizer Arecibo SVE / P.R.			
Contract/Purchase Order/Quote No.			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil	Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	Analysis: TO-15	Special Instructions/ Conditions of Receipt
TB050514	050514	—	X				X						X	
STACK-3	050514	1422	X				X						X	
INLET-3	050514	1427	X				X						X	
VMW-1-3	050514	1435	X				X						X	
VMW-2-3	050514	1440	X				X						X	
SVE-A	050514	1440	X				X						X	
VMW-3C-3	050514	1445	X				X						X	

200-22206 Chain of Custody

JSS JSS JSS JSS

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☒ Unknown

Sample Disposal
☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months
(A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required
☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other _____

QC Requirements (Specify)

	Relinquished By	Date	Time	Received By	Date	Time
1.	Jonathan Serrano	050514	1700	FedEx	050514	1700
2.						
3.				TAL	5/6/11	1030

Comments

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

TestAmerica Burlington
30 Community Drive
Suite 11
South Burlington, VT 05403
phone 802-660-1990 fax 802-660-1919

Canister Samples Chain of Custody Record

TestAmerica Analytical Testing Corp. assumes no liability with respect to the collection and shipment of these samples.

Client Contact Information	Project Manager: Wanda Morales	Samples Collected By: Roberto De Jesus	1 of 2 COCs
Company: ERTEC, PSC	Phone: (787) 792-8902		
Address: Amour St. AS Rpto. Landrau	Email: wmorales@ertecpr.com		
City/State/Zip: RIO Piedras, PR 00926			
Phone: (787) 792-8902	Site Contact: Wanda Morales		
FAX: (787) 783-5555	TA Contact: Don Pawlicki		
Project Name: Pfizer-Arecibo SVE	Analysis Turnaround Time		
Site: Arecibo, PR	Standard (Specify) ✓		
PO #	Rush (Specify)		

Sample Identification	Sample Date(s)	Time Start	Time Stop	Canister Vacuum in Field, "Hg (Start)	Canister Vacuum in Field, "Hg (Stop)	Flow Controller ID	Canister ID	TO-15	MA-APH	EPA 3C	EPA 25C	ASTM D-1946	Other (Please specify in notes section)	Sample Type	Indoor Air	Ambient Air	Soil Gas	Landfill Gas	Other (Please specify in notes section)
TB-080514	080514	—	—	—	—	—	4928	X											X
VMW-1-5	080514	1427	—	—	—	—	3488	X									X		
VMW-2-5	080514	1435	—	—	—	—	4343	X									X		
VMW-3C-5	080514	1443	—	—	—	—	4345	X									X		
SVE-A	080514	1447	—	—	—	—	2965	X									X		
INLET-5	080514	1455	—	—	—	—	3326	X									X		

Temperature (Fahrenheit)	Interior	Ambient	
Start			
Stop			

Pressure (inches of Hg)	Interior	Ambient	
Start			
Stop			

Special Instructions/QC Requirements & Comments:
other: Trip Blank 080514.

Samples Shipped by: Roberto De Jesus/~~Roberto Jesus~~	Date/Time: 08/05/14 @ 1630	Samples Received by: Fed Ex on 08/05/14 @ 1630.
Samples Relinquished by:	Date/Time:	Received by:
Relinquished by:	Date/Time:	Received by:

Lab Use Only **Shipper Name:** **Opened by:** **Condition:**

TestAmerica Burlington
30 Community Drive
Suite 11
South Burlington, VT 05403
phone 802-660-1990 fax 802-660-1919

Canister Samples Chain of Custody Record

TestAmerica Analytical Testing Corp. assumes no liability with respect to the collection and shipment of these samples.

Client Contact Information	Project Manager: Wanda Morales	Samples Collected By: Roberto de Jesús	2 of 2 COCs
Company: ERTEC, PSC	Phone: (787) 792-8902		
Address: Amour St. A5 Rpto. Candray	Email: WMorales@ertecpr.com		
City/State/Zip Río Piedras, PR 00928			
Phone: (787) 792-8902	Site Contact: Wanda Morales		
FAX: (787) 783-5555	TA Contact: Don Pawlicki		
Project Name: Pfizer-Arecibo SVE	**Analysis Turnaround Time**		
Site: Arecibo, PR	Standard (Specify) ✓		
PO #	Rush (Specify)		

Sample Identification	Sample Date(s)	Time Start	Time Stop	Canister Vacuum in Field, "Hg (Start)	Canister Vacuum in Field, "Hg (Stop)	Flow Controller ID	Canister ID	TO-15	MA-APH	EPA 3C	EPA 25C	ASTM D-1946	Other (Please specify in notes section)	Sample Type	Indoor Air	Ambient Air	Soil Gas	Landfill Gas	Other (Please specify in notes section)
STACK-5	080514	1503	✓	✓	✓	✓	3084	X									X		
RJS 08/05/14										RJS 08/05/14									

Temperature (Fahrenheit)			
	Interior	Ambient	
Start			
Stop			

Pressure (inches of Hg)			
	Interior	Ambient	
Start			
Stop			

Special Instructions/QC Requirements & Comments:
Other: Trip Blank 080514.

Samples Shipped by: Roberto de Jesús / ~~Roberto de Jesús~~	Date/Time: 08/05/14 @ 1630	Samples Received by: FedEx on 08/05/14 @ 1630.	
Samples Relinquished by:	Date/Time:	Received by:	
Relinquished by:	Date/Time:	Received by:	

Lab Use Only **Shipper Name:** **Opened by:** **Condition:**

TestAmerica Burlington
30 Community Drive
Suite 11
South Burlington, VT 05403
phone 802-660-1990 fax 802-660-1919

Canister Samples Chain of Custody Record

TestAmerica Analytical Testing Corp. assumes no liability with respect to the collection and shipment of these samples.

1 of 2 COCs

Client Contact Information		Project Manager: Wanda Morales	Samples Collected By:
Company:	ERTEC, PSC	Phone: (787) 792-8902	Roberto De Jesús
Address:	Amur St. Ext Rpto. Landrau	Email: wmorales@ertecpr.com	
City/State/Zip	Rio Piedras, PR 00928		
Phone:	(787) 792-8902	Site Contact: Wanda Morales	
FAX:	(787) 783-5555	TA Contact: Don Dawicki	
Project Name:	Pfizer-Arecibo-SVE	Analysis Turnaround Time	
Site:	Pfizer · Arecibo PR	Standard (Specify) ✓	
PO #		Rush (Specify)	

Sample Identification	Sample Date(s)	Time Start	Time Stop	Canister Vacuum in Field, "Hg (Start)	Canister Vacuum in Field, 'Hg (Stop)	Flow Controller ID	Canister ID	TO-15	MA-APH	EPA 3C	EPA 25C	ASTM D-1946	Other (Please specify in notes section)	Sample Type	Indoor Air	Ambient Air	Soil Gas	Landfill Gas	Other (Please specify in notes section)
VMW-1-6	090414	1116	—	—	—	—	5453	X									X		
VMW-2-6	090414	1137	—	—	—	—	3033	X									X		
VMW-3C-6	090414	1145	—	—	—	—	5669	X									X		
INLET-6	090414	1153	—	—	—	—	4358	X									X		
STACK-6	090414	1203	—	—	—	—	4456	X									X		
SVE-A	090414	1208	—	—	—	—	3560	X									X		

RJB·090414

Temperature (Fahrenheit)	Interior	Ambient	
Start			
Stop			

Pressure (inches of Hg)	Interior	Ambient	
Start			
Stop			

Special Instructions/QC Requirements & Comments:

Samples Shipped by: Roberto De Jesús – Roberto [illegible]	Date/Time: 09/04/14 @ 1500	Samples Received by: 09/04/14 FedEx @ 1500
Samples Relinquished by:	Date/Time:	Received by:
Relinquished by:	Date/Time:	Received by:

Lab Use Only Shipper Name: Opened by: Condition:

TestAmerica Burlington
30 Community Drive
Suite 11
South Burlington, VT 05403
phone 802-660-1990 fax 802-660-1919

Canister Samples Chain of Custody Record

TestAmerica Analytical Testing Corp. assumes no liability with respect to the collection and shipment of these samples.

2 of 2 COCs

Client Contact Information		Project Manager: Wanda Morales	Samples Collected By: Roberto DeJesus
Company: ERTEC, PSC		Phone: (787) 792-8902	
Address: Amur st. A5-Rpto. Laurel		Email: wmorales@ertecpr.com	
City/State/Zip: Rio Piedras, PR 00928		Site Contact: Wanda Morales	
Phone: (787) 792-8902		TA Contact: Don Dawicki	
FAX: (787) 783-5555		Analysis Turnaround Time	
Project Name: Pfizer-Arecibo-SVE		Standard (Specify) ✓	
Site: Pfizer-Arecibo PR		Rush (Specify)	
PO #			

Sample Identification	Sample Date(s)	Time Start	Time Stop	Canister Vacuum in Field, "Hg (Start)	Canister Vacuum in Field, 'Hg (Stop)	Flow Controller ID	Canister ID	TO-15	MA-APH	EPA 3C	EPA 25C	ASTM D-1946	Other (Please specify in notes section)	Sample Type	Indoor Air	Ambient Air	Soil Gas	Landfill Gas	Other (Please specify in notes section)
TB090414	090414						2778	X											X

RJB 09/04/14 — RJB 09/04/14 — RJB 09/04/14

Temperature (Fahrenheit)	Interior	Ambient	
Start			
Stop			

Pressure (inches of Hg)	Interior	Ambient	
Start			
Stop			

Special Instructions/QC Requirements & Comments:
Trip Blank 090414 → other.

Samples Shipped by: Roberto DeJesus - ~~Roberto~~	Date/Time: 09/04/14 @ 1500	Samples Received by: 09/04/14 FedEx @ 1500
Samples Relinquished by:	Date/Time:	Received by:
Relinquished by:	Date/Time:	Received by:

Lab Use Only — Shipper Name: — Opened by: — Condition:

APPENDIX 3

DATA VALIDATION REPORTS

SVE PULSING OPERATIONS PROGRESS REPORT NO. 8
FEBRUARY TO AUGUST 2014
PFIZER PHARMACEUTICALS LLC
ARECIBO, PUERTO RICO

ERTEC

Eden Environmental, LLC

March 5, 2014

Ms. Wanda Morales
ERTEC
Amur St. A - #5
Reparto Landrau
Rio Piedras, PR 00921

RE: Data Validation Report for the SVE TO-15 Air Monitoring of the Pfizer Arecibo Site

Dear Wanda,

Enclosed is the validation report for the air samples collected on February 11, 2014, from the Pfizer Arecibo Site. The following samples were submitted to TestAmerica in Burlington, Vermont and were assigned to Sample Delivery Group (SDG) 200-20895:

STACK-1	SVE-A	VMW-1-1
VMW-2-1	VMW-3C-1	INLET-1
TB 021114		

The data package was received on March 3, 2014. The laboratory performed well, but some qualifications of results were necessary. These qualifications are described in the applicable section of this report and in the Overall Assessment (Section XII).

All samples were analyzed for acetone, methylene chloride, chloroform, and carbon tetrachloride in conformance with the specifications of the USEPA Compendium Method TO-15. The validation effort was restricted to the reported results and supporting data for these compounds.

Data validation was performed in conformance with the specifications of the EPA Region II Standard Operating Procedure (Volatile Organic Analysis of Ambient Air in Canisters by Method TO-15," SOP HW-31 Revision 4, October, 2006). When necessary, professional judgment was applied and appropriately noted in the applicable section of the attached report. The validation effort for these data has the label Stage 4 Validation Manual (S4VM).

Anomalies detected during the validation effort (if any) are included in the appropriate section of the attached report. The Laboratory Analytical Data Forms with all qualifiers resulting from the validation effort (if any were necessary) are included in Attachment A. The EPA Region II qualifiers and their definitions are included in Attachment B.

If you have any questions regarding this report, please give me a call at 225-355-0163 or contact me by e-mail at engrid@eden-env.com

Best Regards,

Engrid Carpenter

Engrid S. Carpenter
President

Eden Environmental, LLC

ANALYTICAL DATA VALIDATION

ERTEC JOB DESCRIPTION – PFIZER ARECIBO – SVE

ERTEC JOB NUMBER – 135072

ORGANIC ANALYSIS DATA

Prepared by: TestAmerica Laboratory, Burlington Vermont
Sample Delivery Group: 200-20895
Selected Volatile Organic Compounds in Air Samples

VALIDATION REPORT

Prepared by: Eden Environmental, LLC
Eden Project Number 13103

Date: March 5, 2014

13103/ESC/CEW
200-20895-TO-15

Eden Environmental, LLC

INTRODUCTION

The following samples were collected on February 11, 2014, submitted to TestAmerica in Burlington, Vermont, and assigned to Sample Delivery Group (SDG) 200-20895:

STACK-1	SVE-A	VMW-1-1
VMW-2-1	VMW-3C-1	INLET-1
TB 021114		

The data package was received on March 3, 2014. The laboratory performed well, but some qualifications of results were necessary. These qualifications are described in the applicable section of this report and in the Overall Assessment (Section XII).

All samples were analyzed for acetone, methylene chloride, chloroform, and carbon tetrachloride using USEPA Method TO-15. The validation effort was restricted to the reported results and supporting data for these compounds.

Data validation was performed in conformance with the specifications of the EPA Region II Standard Operating Procedure (Volatile Organic Analysis of Ambient Air in Canisters by Method TO-15," SOP HW-31 Revision 4, October, 2006). When necessary, professional judgment was applied and appropriately noted in the applicable section of the attached report. The validation effort for these data has the label Stage 4 Validation Manual (S4VM).

Anomalies detected during the validation effort (if any) are included in the appropriate section of the attached report. The Laboratory Analytical Data Forms with all qualifiers resulting from the validation effort (if any were necessary) are included in Attachment A. The EPA Region II qualifiers and their definitions are included in Attachment B.

I. Holding Times, Preservation, and Sample Integrity

All TO-15 analyses were performed within holding time. A copy of the Laboratory Login Sample Receipt Checklist noted that all samples were in good condition with container custody seals intact. Therefore, all requirements for holding times and sample integrity were met. No physical preservation requirements are specified for Summa® canisters.

II. GC/MS Instrument Performance Checks

Results were reported for three bromofluorobenzene (BFB) instrument performance checks. All instrument performance check requirements were met.

III. Calibration

These samples were analyzed on a single gas chromatograph/mass spectrometer (GC/MS) system identified as "CHC." A manual integration was performed on the peak for carbon tetrachloride in the 0.04 ppbv initial calibration standard. Documentation of this integration was provided in the data package demonstrating it was appropriately performed and properly incorporated into the associated quantitation report. No evidence was presented in the data package to indicate that manual integrations were performed on any other project-specified target compounds or on any of the internal standards in any of the calibration standards.

A. Initial Calibration (IC) and Initial Calibration Verification (ICV)

An IC was established on January 3, 2014. An ICV was analyzed immediately following the IC. EPA Region II-specified acceptance criteria were met for all of these standards.

B. Continuing Verification (CV)

Documentation of both CV standards associated with these sample analyses was present in the data package. All EPA Region II-specified acceptance criteria were met for these standards.

IV. Blanks

A laboratory blank was analyzed in each analytical sequence. No project-specified target analytes were detected in either of the laboratory blanks. A trip blank (TB 021114) was submitted with the samples in this data set. No project-specified target analytes were detected in TB 021114.

V. Surrogate Recoveries

The use of a surrogate compound is not addressed in Method TO-15. A surrogate compound was not employed in the analyses of these samples.

VI. Laboratory Check Standard (Audit Accuracy Standard)

A 10 ppbv laboratory check standard (identified as LCS) was analyzed in each analytical sequence containing the reported samples. Each LCS was spiked with all of the project-specified target analytes. Recoveries of the target analytes in both LCSs were within the quality control limits specified by the validation guidance document.

VII. Laboratory Replicate Analyses

STACK-1 was analyzed as a laboratory replicate. Reproducibility between the positively paired results for chloroform and carbon tetrachloride was within the laboratory-specified acceptance limits. Acetone and methylene chloride were not detected in either analysis of this sample; therefore, no further quantitative evaluation of precision could be made from these data.

VIII. Field Duplicates

Collection of true field duplicates is not feasible for air samples; therefore, a better description of these quality control samples would be co-located samples. The validation guidance document does not provide an acceptance criterion for RPDs between reported concentrations in "field duplicate" samples. For the purpose of this validation effort, a maximum acceptance limit of 100 RPD was used to define acceptable agreement between reported results in the co-located samples. Results with RPD values greater than 100 RPD should be used with caution as the concentration and source of these compounds in the reported samples is uncertain.

SVE-A was collected as a co-located sample of VMW-1-1. Acceptable reproducibility between results reported for chloroform (17 RPD) and carbon tetrachloride (10 RPD) was observed. Acetone and methylene chloride were not detected in either of these samples; therefore, no further quantitative evaluation of precision could be made from these data.

IX. Internal Standard Performance

The validator confirmed that the areas and retention times of all three internal standards were within the method-specified acceptance limits for the reported site and quality control analyses.

X. Target Compound Identification

When detected, the target analyte was correctly identified with acceptable supporting mass spectra present in the data package.

XI. Compound Quantitation and Reporting Limits (RLs)

A RL of ≤0.50 ppbv is a required performance criterion for this project. The low concentration standard in the IC was 0.50 ppbv for methylene chloride, 0.20 ppbv for chloroform, and 0.04 ppbv for carbon tetrachloride. The unadjusted RLs are equivalent to or higher than the low concentration standard used to establish the IC and are supported by the reported data.

The low concentration IC standard for acetone was 5.0 ppbv, which is also the RL used for this analyte and supported by the reported data. The RL for acetone does not meet the performance criterion for this project, but does reflect the best efforts of the laboratory.

Results for carbon tetrachloride in the less diluted analyses of SVE-A, VMW-1-1, VMW-2-1, VMW-3C-1, and INLET-1 exceeded the calibration range of the instrument and were qualified as estimated (J) on this basis. Results for carbon tetrachloride only were taken from the more diluted analyses of these samples. All laboratory-applied "E" and "D" qualifiers used to indicate results that exceeded the laboratory-established calibration range of the instrument and results from a more diluted analysis, respectively, were removed by the validator. Laboratory Analytical Data Forms for both analyses of SVE-A, VMW-1-1, VMW-2-1, VMW-3C-1, and INLET-1 are included in Attachment B. However, the Laboratory Analytical Data Form for the less diluted analyses of these samples were hybridized to include the results recommended for use by the validator. The Laboratory Analytical Data Forms for the more diluted analyses of SVE-A, VMW-1-1, VMW-2-1, VMW-3C-1, and INLET-1 were marked "Do Not Use" for clarity.

Target compounds and sample-specific RLs were correctly calculated, accurately reported, and properly adjusted for dilutions (where necessary). Laboratory-applied "J" qualifiers used to denote an estimated concentration between the sample-specific and analyte-specific MDLs and RLs were removed by the validator only if they were superseded by a qualifier resulting from the validation effort.

XII. Tentatively Identified Compounds (TICs)

Library searches were not requested for these samples.

XIII. Documentation

All of the laboratory sample receipt information was provided on the laboratory-generated Login Sample Receipt Checklist, which confirmed that all samples were properly documented and shipped in custody sealed containers.

A copy of the FedEx airbill was included in the data package to document the transfer of the samples from the field to the laboratory.

The Laboratory Analytical Data Forms also include a column identified as MDL (method detection limit). MDLs of 0.40 ppbv for acetone, 0.023 ppbv for methylene chloride, 0.024 ppbv for chloroform, and 0.013 ppbv for carbon tetrachloride are reported, but these MDLs are not supported by the data as received. Therefore, it is recommended that the RLs rather than the MDLs be used as the lowest support limit of detection.

These data presentation issues do not directly affect the validity of the reported results, but they could be problematic if these data are reviewed by a regulatory agency or if they are used in litigation.

XIV. Overall Assessment

Findings of the validation effort resulted in the following qualifications of samples results:

- Results for carbon tetrachloride in the less diluted analyses of SVE-A, VMW-1-1, VMW-2-1, VMW-3C-1, and INLET-1 exceeded the calibration range of the instrument and were qualified as estimated (J) on this basis. Results for carbon tetrachloride only were taken from the more diluted analyses of these samples.

All laboratory-applied "D" and "E" qualifiers were removed by the validator. Laboratory-applied "J" qualifiers used to denote an estimated concentration between the sample-specific and analyte-specific MDLs and RLs were removed by the validator only if they were superseded by a qualifier resulting from the validation effort.

This validation effort is based on the data as provided by the laboratory. Software manipulation cannot be routinely detected during validation and is outside the scope of this review.

This validation report should be added to the data package for all future distributions of TO-15 data reported in SDG 200-20895.

Eden Environmental, LLC

ATTACHMENT A

LABORATORY ANALYTICAL DATA FORMS

Client: Ertec

Job Number: 200-20895-1
Sdg Number: 200-20895

Client Sample ID: **STACK-1**

Lab Sample ID: 200-20895-6
Client Matrix: Air

Date Sampled: 02/11/2014 1244
Date Received: 02/12/2014 1100

TO-15 Volatile Organic Compounds in Ambient Air

Analysis Method:	TO-15	Analysis Batch:	200-68510	Instrument ID:	CHC.i
Prep Method:	Summa Can	Prep Batch:	N/A	Lab File ID:	6208_23.D
Dilution:	6.06			Initial Weight/Volume:	33 mL
Analysis Date:	02/19/2014 0731			Final Weight/Volume:	200 mL
Prep Date:	02/19/2014 0731			Injection Volume:	200 mL

Analyte	Result (ppb v/v)	Qualifier	MDL	RL
Acetone	30	U	7.6	30
Methylene Chloride	3.0	U	0.76	3.0
Chloroform	3.1		0.15	1.2
Carbon tetrachloride	170		0.13	1.2

Analyte	Result (ug/m3)	Qualifier	MDL	RL
Acetone	72	U	18	72
Methylene Chloride	11	U	2.6	11
Chloroform	15		0.74	5.9
Carbon tetrachloride	1100		0.80	7.6

Client: Ertec

Job Number: 200-20895-1
Sdg Number: 200-20895

Client Sample ID: SVE-A

Lab Sample ID: 200-20895-2
Client Matrix: Air

Date Sampled: 02/11/2014 1209
Date Received: 02/12/2014 1100

TO-15 Volatile Organic Compounds in Ambient Air

Analysis Method:	TO-15	Analysis Batch:	200-68510	Instrument ID:	CHC.i
Prep Method:	Summa Can	Prep Batch:	N/A	Lab File ID:	6208_16.D
Dilution:	3740, 22600			Initial Weight/Volume:	46 mL
Analysis Date:	02/19/2014 0126			Final Weight/Volume:	200 mL
Prep Date:	02/19/2014 0126			Injection Volume:	200 mL

Analyte		Result (ppb v/v)	Qualifier	MDL	RL
Acetone		19000	U	4700	19000
Methylene Chloride		1900	U	470	1900
Chloroform		7100		94	750
Carbon tetrachloride	570,000	~~570000~~	~~E~~	~~79~~ 470	~~750~~ 4500

Analyte		Result (ug/m3)	Qualifier	MDL	RL
Acetone		44000	U	11000	44000
Methylene Chloride		6500	U	1600	6500
Chloroform		35000		460	3700
Carbon tetrachloride	3600000	~~3600000~~	~~E~~	~~490~~ 3000	~~4700~~ 28000

eee 03/04/14

Client: Ertec

Job Number: 200-20895-1
Sdg Number: 200-20895

Client Sample ID: SVE-A DL ms 03/04/14

Lab Sample ID: 200-20895-2
Client Matrix: Air

Date Sampled: 02/11/2014 1209
Date Received: 02/12/2014 1100

TO-15 Volatile Organic Compounds in Ambient Air

Analysis Method:	TO-15	Analysis Batch:	200-68510	Instrument ID:	CHC.i
Prep Method:	Summa Can	Prep Batch:	N/A	Lab File ID:	6208_27.D
Dilution:	22600			Initial Weight/Volume:	29 mL
Analysis Date:	02/19/2014 1100	Run Type:	DL	Final Weight/Volume:	200 mL
Prep Date:	02/19/2014 1100			Injection Volume:	200 mL

Analyte	Result (ppb v/v)	Qualifier	MDL	RL
Acetone	110000	U	28000	110000
Methylene Chloride	11000	U	2800	11000
Chloroform	7300	~~D~~	570	4500
Carbon tetrachloride	570000	~~D~~	470	4500

Analyte	Result (ug/m3)	Qualifier	MDL	RL
Acetone	270000	U	67000	270000
Methylene Chloride	39000	U	9800	39000
Chloroform	36000	~~D~~	2800	22000
Carbon tetrachloride	3600000	~~D~~	3000	28000

Do Not Use ms 03/04/14

ms 03/04/14

Client: Ertec

Job Number: 200-20895-1
Sdg Number: 200-20895

Client Sample ID: VMW-1-1

Lab Sample ID: 200-20895-1
Client Matrix: Air

Date Sampled: 02/11/2014 1205
Date Received: 02/12/2014 1100

TO-15 Volatile Organic Compounds in Ambient Air

Analysis Method:	TO-15	Analysis Batch:	200-68510	Instrument ID:	CHC.i
Prep Method:	Summa Can	Prep Batch:	N/A	Lab File ID:	6208_15.D
Dilution:	1460, 16200			Initial Weight/Volume:	20 mL
Analysis Date:	02/19/2014 0034			Final Weight/Volume:	200 mL
Prep Date:	02/19/2014 0034			Injection Volume:	200 mL

Analyte		Result (ppb v/v)	Qualifier	MDL	RL
Acetone		7300	U	1800	7300
Methylene Chloride		730	U	180	730
Chloroform		6000		37	290
Carbon tetrachloride	630,000	~~400000~~	~~E~~	~~31~~ 340	~~290~~ 3200

Analyte		Result (ug/m3)	Qualifier	MDL	RL
Acetone		17000	U	4300	17000
Methylene Chloride		2500	U	630	2500
Chloroform		29000		180	1400
Carbon tetrachloride	4000000	~~2500000~~	~~E~~	~~190~~ 2100	~~1800~~ 20,000

Client: Ertec

Job Number: 200-20895-1
Sdg Number: 200-20895

Client Sample ID: VMW-1-1 DL rsw 03/04/14

Lab Sample ID: 200-20895-1
Client Matrix: Air

Date Sampled: 02/11/2014 1205
Date Received: 02/12/2014 1100

TO-15 Volatile Organic Compounds in Ambient Air

Analysis Method:	TO-15	Analysis Batch:	200-68510	Instrument ID:	CHC.i
Prep Method:	Summa Can	Prep Batch:	N/A	Lab File ID:	6208_26.D
Dilution:	16200			Initial Weight/Volume:	24 mL
Analysis Date:	02/19/2014 1008	Run Type:	DL	Final Weight/Volume:	200 mL
Prep Date:	02/19/2014 1008			Dilution Volume:	200 mL

Analyte	Result (ppb v/v)	Qualifier	MDL	RL
Acetone	81000	U	20000	81000
Methylene Chloride	8100	U	2000	8100
Chloroform	7800	D	410	3200
Carbon tetrachloride	630000	D	340	3200

Analyte	Result (ug/m3)	Qualifier	MDL	RL
Acetone	190000	U	48000	190000
Methylene Chloride	28000	U	7000	28000
Chloroform	38000	D	2000	16000
Carbon tetrachloride	4000000	D	2100	20000

Do Not Use rsw 03/04/14

Client: Ertec

Job Number: 200-20895-1
Sdg Number: 200-20895

Client Sample ID: VMW-2-1

Lab Sample ID: 200-20895-3
Client Matrix: Air

Date Sampled: 02/11/2014 1217
Date Received: 02/12/2014 1100

TO-15 Volatile Organic Compounds in Ambient Air

Analysis Method:	TO-15	Analysis Batch:	200-68510	Instrument ID:	CHC.i
Prep Method:	Summa Can	Prep Batch:	N/A	Lab File ID:	6208_17.D
Dilution:	1920, 16100			Initial Weight/Volume:	30 mL
Analysis Date:	02/19/2014 0218			Final Weight/Volume:	200 mL
Prep Date:	02/19/2014 0218			Injection Volume:	200 mL

Analyte		Result (ppb v/v)	Qualifier	MDL	RL
Acetone		9600	U	2400	9600
Methylene Chloride		960	U	240	960
Chloroform		7500		48	380
Carbon tetrachloride	500,000	~~400000~~	~~E~~	~~40~~ 340	~~380~~ 3200

Analyte		Result (ug/m3)	Qualifier	MDL	RL
Acetone		23000	U	5700	23000
Methylene Chloride		3300	U	830	3300
Chloroform		36000		230	1900
Carbon tetrachloride	3100000	~~2500000~~	~~E~~	~~250~~ 2100	~~2400~~ 20000

rre 03/04/13

Client: Ertec

Job Number: 200-20895-1
Sdg Number: 200-20895

Client Sample ID: VMW-2-1 DL mw 03/04/14

Lab Sample ID: 200-20895-3
Client Matrix: Air

Date Sampled: 02/11/2014 1217
Date Received: 02/12/2014 1100

TO-15 Volatile Organic Compounds in Ambient Air

Analysis Method:	TO-15	Analysis Batch:	200-68510	Instrument ID:	CHC.i
Prep Method:	Summa Can	Prep Batch:	N/A	Lab File ID:	6208_28.D
Dilution:	16100			Initial Weight/Volume:	48 mL
Analysis Date:	02/19/2014 1152	Run Type:	DL	Final Weight/Volume:	200 mL
Prep Date:	02/19/2014 1152			Injection Volume:	200 mL

Analyte	Result (ppb v/v)	Qualifier	MDL	RL
Acetone	81000	U	20000	81000
Methylene Chloride	8100	U	2000	8100
Chloroform	9100	D	400	3200
Carbon tetrachloride	500000	D	340	3200

Analyte	Result (ug/m3)	Qualifier	MDL	RL
Acetone	190000	U	48000	190000
Methylene Chloride	28000	U	7000	28000
Chloroform	44000	D	2000	16000
Carbon tetrachloride	3100000	D	2100	20000

mw 03/04/14

Do Not

Do mw 03/04/14

Client: Ertec

Job Number: 200-20895-1
Sdg Number: 200-20895

Client Sample ID: VMW-3C-1

Lab Sample ID: 200-20895-4
Client Matrix: Air

Date Sampled: 02/11/2014 1225
Date Received: 02/12/2014 1100

TO-15 Volatile Organic Compounds in Ambient Air

Analysis Method:	TO-15	Analysis Batch:	200-68510	Instrument ID:	CHC.i
Prep Method:	Summa Can	Prep Batch:	N/A	Lab File ID:	6208_21.D
Dilution:	2190/14000			Initial Weight/Volume:	22 mL
Analysis Date:	02/19/2014 0546			Final Weight/Volume:	200 mL
Prep Date:	02/19/2014 0546			Injection Volume:	200 mL

Analyte	Result (ppb v/v)	Qualifier	MDL	RL
Acetone	11000	U	2700	11000
Methylene Chloride	1100	U	270	1100
Chloroform	14000		55	440
Carbon tetrachloride 370,000	~~350000~~	~~E~~	~~46~~ 290	~~440~~ 2800

Analyte	Result (ug/m3)	Qualifier	MDL	RL
Acetone	26000	U	6500	26000
Methylene Chloride	3800	U	950	3800
Chloroform	68000		270	2100
Carbon tetrachloride 2306000	~~2200000~~	~~E~~	~~200~~ 1800	~~2800~~ 18000

ere 03/04/14

Client: Ertec

Job Number: 200-20895-1
Sdg Number: 200-20895

Client Sample ID: VMW-3C-1 DL ere 03/04/13

Lab Sample ID: 200-20895-4
Client Matrix: Air

Date Sampled: 02/11/2014 1225
Date Received: 02/12/2014 1100

TO-15 Volatile Organic Compounds in Ambient Air

Analysis Method:	TO-15	Analysis Batch:	200-68588	Instrument ID:	CHC.i
Prep Method:	Summa Can	Prep Batch:	N/A	Lab File ID:	6239_06.D
Dilution:	14000			Initial Weight/Volume:	44 mL
Analysis Date:	02/19/2014 1929	Run Type:	DL	Final Weight/Volume:	200 mL
Prep Date:	02/19/2014 1929			Injection Volume:	200 mL

Analyte	Result (ppb v/v)	Qualifier	MDL	RL
Acetone	70000	U	18000	70000
Methylene Chloride	7000	U	1800	7000
Chloroform	15000	~~D~~	350	2800
Carbon tetrachloride	370000	~~D~~	290	2800

Analyte	Result (ug/m3)	Qualifier	MDL	RL
Acetone	170000	U	42000	170000
Methylene Chloride	24000	U	6100	24000
Chloroform	72000	~~D~~	1700	14000
Carbon tetrachloride	2300000	~~D~~	1800	18000

DO Not Use 03/04/14

ere 03/04/13

Client: Ertec

Job Number: 200-20895-1
Sdg Number: 200-20895

Client Sample ID: INLET-1

Lab Sample ID: 200-20895-5
Client Matrix: Air

Date Sampled: 02/11/2014 1235
Date Received: 02/12/2014 1100

TO-15 Volatile Organic Compounds in Ambient Air

Analysis Method:	TO-15	Analysis Batch:	200-68510	Instrument ID:	CHC.i
Prep Method:	Summa Can	Prep Batch:	N/A	Lab File ID:	6208_22.D
Dilution:	3330, 16200			Initial Weight/Volume:	30 mL
Analysis Date:	02/19/2014 0639			Final Weight/Volume:	200 mL
Prep Date:	02/19/2014 0639			Injection Volume:	200 mL

Analyte		Result (ppb v/v)	Qualifier	MDL	RL
Acetone		17000	U	4200	17000
Methylene Chloride		1700	U	420	1700
Chloroform		13000		83	670
Carbon tetrachloride	360,000	~~400000~~	~~E~~	~~70~~ 340	~~670~~ 3200

Analyte		Result (ug/m3)	Qualifier	MDL	RL
Acetone		40000	U	9900	40000
Methylene Chloride		5800	U	1400	5800
Chloroform		61000		410	3300
Carbon tetrachloride	2200000	~~2500000~~	~~E~~	~~440~~ 2100	~~4200~~ 20000

ms 03/04/14

Client: Ertec

Job Number: 200-20895-1
Sdg Number: 200-20895

Client Sample ID: INLET-1 DL ere 03/04/14

Lab Sample ID: 200-20895-5
Client Matrix: Air

Date Sampled: 02/11/2014 1235
Date Received: 02/12/2014 1100

TO-15 Volatile Organic Compounds in Ambient Air

Analysis Method:	TO-15	Analysis Batch:	200-68588	Instrument ID:	CHC.i
Prep Method:	Summa Can	Prep Batch:	N/A	Lab File ID:	6239_07.D
Dilution:	16200			Initial Weight/Volume:	23 mL
Analysis Date:	02/19/2014 2021	Run Type:	DL	Final Weight/Volume:	200 mL
Prep Date:	02/19/2014 2021			Injection Volume:	200 mL

Analyte	Result (ppb v/v)	Qualifier	MDL	RL
Acetone	81000	U	20000	81000
Methylene Chloride	8100	U	2000	8100
Chloroform	12000	~~D~~	410	3200
Carbon tetrachloride	360000	~~D~~	340	3200

Analyte	Result (ug/m3)	Qualifier	MDL	RL
Acetone	190000	U	48000	190000
Methylene Chloride	28000	U	7000	28000
Chloroform	57000	~~D~~	2000	16000
Carbon tetrachloride	2200000	~~D~~	2100	20000

Do Not Use ere 03/04/14

ere 03/04/14

Client: Ertec

Job Number: 200-20895-1
Sdg Number: 200-20895

Client Sample ID: **TB 021114**

Lab Sample ID: 200-20895-7
Client Matrix: Air

Date Sampled: 02/11/2014 0000
Date Received: 02/12/2014 1100

TO-15 Volatile Organic Compounds in Ambient Air

Analysis Method:	TO-15	Analysis Batch:	200-68510	Instrument ID:	CHC.i
Prep Method:	Summa Can	Prep Batch:	N/A	Lab File ID:	6208_25.D
Dilution:	1.0			Initial Weight/Volume:	200 mL
Analysis Date:	02/19/2014 0916			Final Weight/Volume:	200 mL
Prep Date:	02/19/2014 0916			Injection Volume:	200 mL

Analyte	Result (ppb v/v)	Qualifier	MDL	RL
Acetone	5.0	U	1.3	5.0
Methylene Chloride	0.50	U	0.13	0.50
Chloroform	0.20	U	0.025	0.20
Carbon tetrachloride	0.20	U	0.021	0.20

Analyte	Result (ug/m3)	Qualifier	MDL	RL
Acetone	12	U	3.0	12
Methylene Chloride	1.7	U	0.43	1.7
Chloroform	0.98	U	0.12	0.98
Carbon tetrachloride	1.3	U	0.13	1.3

Eden Environmental, LLC

ATTACHMENT B

EPA REGION II QUALIFIERS AND THEIR DEFINITIONS

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

N - The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."

NJ - The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.

UJ - The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

R - The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

Eden Environmental, LLC

April 21, 2014

Ms. Wanda Morales
ERTEC
Amur St. A - #5
Reparto Landrau
Rio Piedras, PR 00921

RE: Data Validation Report for the SVE TO-15 Air Monitoring of the Pfizer Arecibo Site

Dear Wanda,

Enclosed is the validation report for the air samples collected on March 28, 2014, from the Pfizer Arecibo Site. The following samples were submitted to TestAmerica in Burlington, Vermont and were assigned to Sample Delivery Group (SDG) 200-21630:

STACK-2	VMW-1-2	VMW-2-2
VMW-3C-2	INLET-2	

The laboratory performed well, and no qualification of sample results was necessary. Laboratory-applied "J" qualifiers used to denote an estimated concentration between the sample-specific and analyte-specific method detection limits (MDLs) and reporting limits (RLs) were not removed by the validator.

All samples were analyzed for acetone, methylene chloride, chloroform, and carbon tetrachloride in conformance with the specifications of the USEPA Compendium Method TO-15. The validation effort was restricted to the reported results and supporting data for these compounds.

Data validation was performed in conformance with the specifications of the EPA Region II Standard Operating Procedure (Volatile Organic Analysis of Ambient Air in Canisters by Method TO-15," SOP HW-31 Revision 4, October, 2006). When necessary, professional judgment was applied and appropriately noted in the applicable section of the attached report. The validation effort for these data has the label Stage 4 Validation Manual (S4VM).

Anomalies detected during the validation effort (if any) are included in the appropriate section of the attached report. The Laboratory Analytical Data Forms with all qualifiers resulting from the validation effort (if any were necessary) are included in Attachment A. The EPA Region II qualifiers and their definitions are included in Attachment B.

If you have any questions regarding this report, please give me a call at 225-355-0163 or contact me by e-mail at engrid@eden-env.com

Best Regards,

Engrid Carpenter

Engrid S. Carpenter
President

Eden Environmental, LLC

ANALYTICAL DATA VALIDATION

ERTEC JOB DESCRIPTION – PFIZER ARECIBO – SVE

ERTEC JOB NUMBER – 135072

ORGANIC ANALYSIS DATA

Prepared by: TestAmerica Laboratory, Burlington Vermont
Sample Delivery Group: 200-21630
Selected Volatile Organic Compounds in Air Samples

VALIDATION REPORT

Prepared by: Eden Environmental, LLC
Eden Project Number 13103

Date: April 21, 2014

13103/ESC/CEW
200-21630-TO-15

Eden Environmental, LLC

INTRODUCTION

Enclosed is the validation report for the air samples collected on March 28, 2014, from the Pfizer Arecibo Site. The following samples were submitted to TestAmerica in Burlington, Vermont and were assigned to Sample Delivery Group (SDG) 200-21630:

STACK-2	VMW-1-2	VMW-2-2
VMW-3C-2	INLET-2	

The laboratory performed well, and no qualification of sample results was necessary. Laboratory-applied "J" qualifiers used to denote an estimated concentration between the sample-specific and analyte-specific method detection limits (MDLs) and reporting limits (RLs) were not removed by the validator.

All samples were analyzed for acetone, methylene chloride, chloroform, and carbon tetrachloride using USEPA Method TO-15. The validation effort was restricted to the reported results and supporting data for these compounds.

Data validation was performed in conformance with the specifications of the EPA Region II Standard Operating Procedure (Volatile Organic Analysis of Ambient Air in Canisters by Method TO-15," SOP HW-31 Revision 4, October, 2006). When necessary, professional judgment was applied and appropriately noted in the applicable section of the attached report. The validation effort for these data has the label Stage 4 Validation Manual (S4VM).

Anomalies detected during the validation effort (if any) are included in the appropriate section of the attached report. The Laboratory Analytical Data Forms with all qualifiers resulting from the validation effort (if any were necessary) are included in Attachment A. The EPA Region II qualifiers and their definitions are included in Attachment B.

I. Holding Times, Preservation, and Sample Integrity

All TO-15 analyses were performed within holding time. A copy of the Laboratory Login Sample Receipt Checklist noted that all samples were in good condition with container custody seals intact. Therefore, all requirements for holding times and sample integrity were met. No physical preservation requirements are specified for Summa® canisters.

II. GC/MS Instrument Performance Checks

Results were reported for two bromofluorobenzene (BFB) instrument performance checks. All instrument performance check requirements were met.

III. Calibration

These samples were analyzed on a single gas chromatograph/mass spectrometer (GC/MS) system identified as "CHC." No evidence was presented in the data package to indicate that manual integrations were performed on any project-specified target compounds or on any of the internal standards in any of the calibration standards.

A. Initial Calibration (IC) and Initial Calibration Verification (ICV)

An IC was established on March 18, 2014. An ICV was analyzed immediately following the IC. EPA Region II-specified acceptance criteria were met for all of these standards.

B. Continuing Verification (CV)

Documentation for a CV standard associated with these sample analyses was present in the data package. All EPA Region II-specified acceptance criteria were met for this standard.

IV. Blanks

A laboratory blank was analyzed in the analytical sequence containing the site samples. No project-specified target analytes were detected in the laboratory blank. No field-submitted blanks were submitted with the samples in this data set.

V. Surrogate Recoveries

The use of a surrogate compound is not addressed in Method TO-15. A surrogate compound was not employed in the analyses of these samples.

VI. Laboratory Check Standard (Audit Accuracy Standard)

A 10 ppbv laboratory check standard (identified as LCS) was analyzed in the analytical sequence containing the reported samples. The LCS was spiked with all of the project-specified target analytes, each at 10 ppb/v. Recoveries of the target analytes were within the quality control limits specified by the validation guidance document.

VII. Laboratory Replicate Analyses

STACK-2 was analyzed as a laboratory replicate. Reproducibility between the positively paired results for chloroform and carbon tetrachloride was within the laboratory-specified acceptance limits. Acetone and methylene chloride were not detected in either analysis of this sample; therefore, no further quantitative evaluation of precision could be made from these data.

VIII. Field Duplicates

Collection of true field duplicates is not feasible for air samples; therefore, a better description of these quality control samples would be co-located samples. The validation guidance document does not provide an acceptance criterion for RPDs between reported concentrations in "field duplicate" samples. For the purpose of this validation effort, a maximum acceptance limit of 100 RPD was used to define acceptable agreement between reported results in the co-located samples. Results with RPD values greater than 100 RPD should be used with caution as the concentration and source of these compounds in the reported samples is uncertain. No co-located samples were included in this data set.

IX. Internal Standard Performance

The validator confirmed that the areas and retention times of all three internal standards were within the method-specified acceptance limits for the reported site and quality control analyses.

X. Target Compound Identification

When detected, the target analyte was correctly identified with acceptable supporting mass spectra present in the data package.

XI. Compound Quantitation and Reporting Limits (RLs)

A RL of ≤0.50 ppbv is a required performance criterion for this project. The low concentration standard in the IC was 0.50 ppbv for methylene chloride, 0.20 ppbv for chloroform, and 0.04 ppbv for carbon tetrachloride. The unadjusted RLs are equivalent to or higher than the low concentration standard used to establish the IC and are supported by the reported data.

The low concentration IC standard for acetone was 5.0 ppbv, which is also the RL used for this analyte and supported by the reported data. The RL for acetone does not meet the performance criterion for this project, but does reflect the best efforts of the laboratory.

Target compounds and sample-specific RLs were correctly calculated, accurately reported, and properly adjusted for dilutions (where necessary). Laboratory-applied "J" qualifiers used to denote an estimated concentration between the sample-specific and analyte-specific MDLs and RLs were removed by the validator only if they were superseded by a qualifier resulting from the validation effort.

XII. Tentatively Identified Compounds (TICs)

Library searches were not requested for these samples.

XIII. Documentation

All of the laboratory sample receipt information was provided on the laboratory-generated Login Sample Receipt Checklist, which confirmed that all samples were properly documented and shipped in custody sealed containers.

A copy of the FedEx airbill was included in the data package to document the transfer of the samples from the field to the laboratory.

The Laboratory Analytical Data Forms also include a column identified as MDL (method detection limit). MDLs of 0.40 ppbv for acetone, 0.023 ppbv for methylene chloride, 0.024 ppbv for chloroform, and 0.013 ppbv for carbon tetrachloride are reported, but these MDLs are not supported by the data as received. Therefore, it is recommended that the RLs rather than the MDLs be used as the lowest support limit of detection.

These data presentation issues do not directly affect the validity of the reported results, but they could be problematic if these data are reviewed by a regulatory agency or if they are used in litigation.

XIV. Overall Assessment

The laboratory performed well, and no qualification of sample results was necessary. Laboratory-applied "J" qualifiers used to denote an estimated concentration between the sample-specific and analyte-specific MDLs and RLs were removed by the validator only if they were superseded by a qualifier resulting from the validation effort.

This validation effort is based on the data as provided by the laboratory. Software manipulation cannot be routinely detected during validation and is outside the scope of this review.

This validation report should be added to the data package for all future distributions of TO-15 data reported in SDG 200-21630.

Eden Environmental, LLC

ATTACHMENT A

LABORATORY ANALYTICAL DATA FORMS

Client: Ertec

Job Number: 200-21630-1
Sdg Number: 200-21630

Client Sample ID: **STACK-2**

Lab Sample ID: 200-21630-5
Client Matrix: Air

Date Sampled: 03/28/2014 1115
Date Received: 03/29/2014 1035

TO-15 Volatile Organic Compounds in Ambient Air

Analysis Method:	TO-15	Analysis Batch:	200-70372	Instrument ID:	CHC.i
Prep Method:	Summa Can	Prep Batch:	N/A	Lab File ID:	6881_13.D
Dilution:	250			Initial Weight/Volume:	43 mL
Analysis Date:	04/04/2014 2017			Final Weight/Volume:	200 mL
Prep Date:	04/04/2014 2017			Injection Volume:	200 mL

Analyte	Result (ppb v/v)	Qualifier	MDL	RL
Acetone	1300	U	310	1300
Methylene Chloride	130	U	31	130
Chloroform	330		6.3	50
Carbon tetrachloride	5600		5.3	50

Analyte	Result (ug/m3)	Qualifier	MDL	RL
Acetone	3000	U	740	3000
Methylene Chloride	430	U	110	430
Chloroform	1600		31	240
Carbon tetrachloride	35000		33	310

Client: Ertec

Job Number: 200-21630-1
Sdg Number: 200-21630

Client Sample ID: **VMW-1-2**

Lab Sample ID: 200-21630-1
Client Matrix: Air

Date Sampled: 03/28/2014 1031
Date Received: 03/29/2014 1035

TO-15 Volatile Organic Compounds in Ambient Air

Analysis Method:	TO-15	Analysis Batch:	200-70372	Instrument ID:	CHC.i
Prep Method:	Summa Can	Prep Batch:	N/A	Lab File ID:	6881_09.D
Dilution:	3480			Initial Weight/Volume:	45 mL
Analysis Date:	04/04/2014 1648			Final Weight/Volume:	200 mL
Prep Date:	04/04/2014 1648			Injection Volume:	200 mL

Analyte	Result (ppb v/v)	Qualifier	MDL	RL
Acetone	17000	U	4400	17000
Methylene Chloride	1700	U	440	1700
Chloroform	5000		87	700
Carbon tetrachloride	75000		73	700

Analyte	Result (ug/m3)	Qualifier	MDL	RL
Acetone	41000	U	10000	41000
Methylene Chloride	6000	U	1500	6000
Chloroform	24000		420	3400
Carbon tetrachloride	470000		460	4400

Client: Ertec

Job Number: 200-21630-1
Sdg Number: 200-21630

Client Sample ID: **VMW-2-2**

Lab Sample ID: 200-21630-2
Client Matrix: Air

Date Sampled: 03/28/2014 1056
Date Received: 03/29/2014 1035

TO-15 Volatile Organic Compounds in Ambient Air

Analysis Method:	TO-15	Analysis Batch:	200-70372	Instrument ID:	CHC.i
Prep Method:	Summa Can	Prep Batch:	N/A	Lab File ID:	6881_10.D
Dilution:	3350			Initial Weight/Volume:	48 mL
Analysis Date:	04/04/2014 1740			Final Weight/Volume:	200 mL
Prep Date:	04/04/2014 1740			Injection Volume:	200 mL

Analyte	Result (ppb v/v)	Qualifier	MDL	RL
Acetone	17000	U	4200	17000
Methylene Chloride	1700	U	420	1700
Chloroform	5200		84	670
Carbon tetrachloride	79000		70	670

Analyte	Result (ug/m3)	Qualifier	MDL	RL
Acetone	40000	U	10000	40000
Methylene Chloride	5800	U	1500	5800
Chloroform	25000		410	3300
Carbon tetrachloride	500000		440	4200

Client: Ertec

Job Number: 200-21630-1
Sdg Number: 200-21630

Client Sample ID: VMW-3C-2

Lab Sample ID: 200-21630-3
Client Matrix: Air

Date Sampled: 03/28/2014 1104
Date Received: 03/29/2014 1035

TO-15 Volatile Organic Compounds In Ambient Air

Analysis Method:	TO-15	Analysis Batch:	200-70372	Instrument ID:	CHC.i
Prep Method:	Summa Can	Prep Batch:	N/A	Lab File ID:	6881_11.D
Dilution:	1690			Initial Weight/Volume:	26 mL
Analysis Date:	04/04/2014 1832			Final Weight/Volume:	200 mL
Prep Date:	04/04/2014 1832			Injection Volume:	200 mL

Analyte	Result (ppb v/v)	Qualifier	MDL	RL
Acetone	8500	U	2100	8500
Methylene Chloride	850	U	210	850
Chloroform	2100		42	340
Carbon tetrachloride	33000		35	340

Analyte	Result (ug/m3)	Qualifier	MDL	RL
Acetone	20000	U	5000	20000
Methylene Chloride	2900	U	730	2900
Chloroform	10000		210	1700
Carbon tetrachloride	210000		220	2100

Client: Ertec

Job Number: 200-21630-1
Sdg Number: 200-21630

Client Sample ID: INLET-2

Lab Sample ID: 200-21630-4
Client Matrix: Air

Date Sampled: 03/28/2014 1108
Date Received: 03/29/2014 1035

TO-15 Volatile Organic Compounds in Ambient Air

Analysis Method:	TO-15	Analysis Batch:	200-70372	Instrument ID:	CHC.i
Prep Method:	Summa Can	Prep Batch:	N/A	Lab File ID:	6881_12.D
Dilution:	2370			Initial Weight/Volume:	61 mL
Analysis Date:	04/04/2014 1924			Final Weight/Volume:	200 mL
Prep Date:	04/04/2014 1924			Injection Volume:	200 mL

Analyte	Result (ppb v/v)	Qualifier	MDL	RL
Acetone	12000	U	3000	12000
Methylene Chloride	1200	U	300	1200
Chloroform	2700		59	470
Carbon tetrachloride	41000		50	470

Analyte	Result (ug/m3)	Qualifier	MDL	RL
Acetone	28000	U	7000	28000
Methylene Chloride	4100	U	1000	4100
Chloroform	13000		290	2300
Carbon tetrachloride	260000		310	3000

Eden Environmental, LLC

ATTACHMENT B

EPA REGION II QUALIFIERS AND THEIR DEFINITIONS

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

N - The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."

NJ - The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.

UJ - The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

R - The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

Eden Environmental, LLC

May 29, 2014

Ms. Wanda Morales
ERTEC
Amur St. A - #5
Reparto Landrau
Rio Piedras, PR 00921

RE: Data Validation Report for the SVE TO-15 Air Monitoring of the Pfizer Arecibo Site

Dear Wanda,

Enclosed is the validation report for the air samples collected on May 5, 2014, from the Pfizer Arecibo Site. The following samples were submitted to TestAmerica in Burlington, Vermont and were assigned to Sample Delivery Group (SDG) 200-22206:

STACK-3	INLET-3	VMW-1-3
VMW-2-3	VMW-3C-3	SVE-A
TB050514		

The data package was received on May 20, 2014. The laboratory performed well, but some qualifications of results were necessary. These qualifications are described in the applicable section of this report and in the Overall Assessment (Section XII).

All samples were analyzed for acetone, methylene chloride, chloroform, and carbon tetrachloride in conformance with the specifications of the USEPA Compendium Method TO-15. The validation effort was restricted to the reported results and supporting data for these compounds.

Data validation was performed in conformance with the specifications of the EPA Region II Standard Operating Procedure (Volatile Organic Analysis of Ambient Air in Canisters by Method TO-15," SOP HW-31 Revision 4, October, 2006). When necessary, professional judgment was applied and appropriately noted in the applicable section of the attached report. The validation effort for these data has the label Stage 4 Validation Manual (S4VM).

Anomalies detected during the validation effort (if any) are included in the appropriate section of the attached report. The Laboratory Analytical Data Forms with all qualifiers resulting from the validation effort (if any were necessary) are included in Attachment A. The EPA Region II qualifiers and their definitions are included in Attachment B.

If you have any questions regarding this report, please give me a call at 225-355-0163 or contact me by e-mail at engrid@eden-env.com

Best Regards,

Engrid S. Carpenter

Engrid S. Carpenter
President

Eden Environmental, LLC

ANALYTICAL DATA VALIDATION

ERTEC JOB DESCRIPTION – PFIZER ARECIBO – SVE

ERTEC JOB NUMBER –145288

Verify job no.

ORGANIC ANALYSIS DATA

Prepared by: TestAmerica Laboratory, Burlington Vermont
Sample Delivery Group: 200-22206
Selected Volatile Organic Compounds in Air Samples

VALIDATION REPORT

Prepared by: Eden Environmental, LLC
Eden Project Number 13103

Date: May 29, 2014

13103/ESC/CEW
200-22206-TO-15

Eden Environmental, LLC

INTRODUCTION

The following samples were collected on May 5, 2014, submitted to TestAmerica in Burlington, Vermont, and assigned to Sample Delivery Group (SDG) 200-22206:

STACK-3	INLET-3	VMW-1-3
VMW-2-3	VMW-3C-3	SVE-A
TB050514		

All samples were analyzed for acetone, methylene chloride, chloroform, and carbon tetrachloride using USEPA Method TO-15. The validation effort was restricted to the reported results and supporting data for these compounds.

Data validation was performed in conformance with the specifications of the EPA Region II Standard Operating Procedure (Volatile Organic Analysis of Ambient Air in Canisters by Method TO-15," SOP HW-31 Revision 4, October, 2006). When necessary, professional judgment was applied and appropriately noted in the applicable section of the attached report. The validation effort for these data has the label Stage 4 Validation Manual (S4VM).

Anomalies detected during the validation effort (if any) are included in the appropriate section of the attached report. The Laboratory Analytical Data Forms with all qualifiers resulting from the validation effort (if any were necessary) are included in Attachment A. The EPA Region II qualifiers and their definitions are included in Attachment B.

I. Holding Times, Preservation, and Sample Integrity

All TO-15 analyses were performed within holding time. A copy of the Laboratory Login Sample Receipt Checklist noted that all samples were in good condition with container custody seals intact. Therefore, all requirements for holding times and sample integrity were met. No physical preservation requirements are specified for Summa® canisters.

II. GC/MS Instrument Performance Checks

Results were reported for three bromofluorobenzene (BFB) instrument performance checks. All instrument performance check requirements were met.

III. Calibration

These samples were analyzed on a single GC/MS system, which was identified as "CHB." No evidence was presented in the data package to indicate that manual integrations were performed on any project-specified target compounds or on any of the internal standards in any of the calibration standards.

A. Initial Calibration (IC) and Initial Calibration Verification (ICV)

An IC was established on March 14, 2014. An ICV was analyzed immediately following the IC. EPA Region II-specified acceptance criteria were met for all of these standards.

B. Continuing Verification (CV)

Documentation of both CV standards associated with these sample analyses was present in the data package. All EPA Region II-specified acceptance criteria were met for these standards.

IV. Blanks

A laboratory blank was analyzed in each analytical sequence. No project-specified target analytes were detected in either of the laboratory blanks.

A trip blank (TB050514) was submitted with the samples included in this data set. No project-specified target analytes were detected in TB050514.

V. Surrogate Recoveries

The use of a surrogate compound is not addressed in Method TO-15. A surrogate compound was not employed in the analyses of these samples.

VI. Laboratory Check Standard (Audit Accuracy Standard)

A 10 ppbv laboratory check standard (identified as LCS) was analyzed in each analytical sequence containing the reported samples. Each LCS was spiked with all of the project-specified target analytes. Recoveries of the target analytes in both LCSs were within the quality control limits specified by the validation guidance document.

VII. Laboratory Replicate Analyses

STACK-3 was analyzed as a laboratory replicate. Reproducibility between the positively paired results for chloroform and carbon tetrachloride was within the laboratory-specified acceptance limits. Acetone and methylene chloride were not detected in either analysis of this sample; therefore, no further quantitative evaluation of precision could be made from these data.

VIII. Field Duplicates

Collection of true field duplicates is not feasible for air samples; therefore, a better description of these quality control samples would be co-located samples. The validation guidance document does not provide an acceptance criterion for RPDs between reported concentrations in "field duplicate" samples. For the purpose of this validation effort, a maximum acceptance limit of 100 RPD was used to define acceptable agreement between reported results in the co-located samples. Results with RPD values greater than 100 RPD should be used with caution as the concentration and source of these compounds in the reported samples is uncertain.

SVE-A was collected as a co-located sample of SVE-2-3. Poor reproducibility between results reported for chloroform (113 RPD) and carbon tetrachloride (133 RPD) was observed. Based on poor reproducibility in the co-located sample analyses, results for chloroform and carbon tetrachloride in SVE-2-3 and SVE-A were qualified as estimated (J). Acetone and methylene chloride were not detected in either of these samples; therefore, no further quantitative evaluation of precision could be made from these data.

IX. Internal Standard Performance

The validator confirmed that the areas and retention times of all three internal standards were within the method-specified acceptance limits for the reported site and quality control analyses.

X. Target Compound Identification

When detected, the target analyte was correctly identified with acceptable supporting mass spectra present in the data package.

XI. Compound Quantitation and Reporting Limits (RLs)

A RL of ≤0.50 ppbv is a required performance criterion for this project. The low concentration standard in the IC was 0.50 ppbv for methylene chloride, 0.20 ppbv for chloroform, and 0.04 ppbv for carbon tetrachloride. The unadjusted RLs are equivalent to or higher than the low concentration standard used to establish the IC and are supported by the reported data.

The low concentration IC standard for acetone was 5.0 ppbv, which is also the RL used for this analyte and supported by the reported data. The RL for acetone does not meet the performance criterion for this project, but does reflect the best efforts of the laboratory.

The concentration of carbon tetrachloride in the less diluted analysis of VMW-2-3 exceeded the laboratory-established calibration range of the instrument and was qualified as estimated (J) on this basis. A more diluted analysis of this sample was performed and the concentration of carbon tetrachloride was within the calibration range. The results for carbon tetrachloride only was taken from the more diluted analysis of this sample. The laboratory-applied "E" and "D" qualifiers used to indicate results that exceeded the laboratory-established calibration range of the instrument and results from a more diluted analysis, respectively, were removed by the validator. The Laboratory Analytical Data Form for both analyses of VMW-2-3 are included in Attachment B. However, the Laboratory Analytical Data Form for the less diluted analysis of this sample was hybridized to include the result for carbon tetrachloride recommended for use by the validator. The Laboratory Analytical Data Form for the more diluted analysis of VMW-2-3 was marked "Do Not Use" for clarity.

XII. Tentatively Identified Compounds (TICs)

Library searches were not requested for these samples.

XIII. Documentation

All of the laboratory sample receipt information was provided on the laboratory-generated Login Sample Receipt Checklist, which confirmed that all samples were properly documented and shipped in custody sealed containers.

A copy of the FedEx airbill was included in the data package to document the transfer of the samples from the field to the laboratory.

The Laboratory Analytical Data Forms also include a column identified as MDL (method detection limit). MDLs of 0.40 ppbv for acetone, 0.023 ppbv for methylene chloride, 0.024 ppbv for chloroform, and 0.013 ppbv for carbon tetrachloride are reported, but these MDLs are not supported by the data as received. Therefore, it is recommended that the RLs rather than the MDLs be used as the lowest support limit of detection.

XIV. Overall Assessment

Findings of the validation effort resulted in the following qualifications of samples results:

- Based on poor reproducibility in the co-located sample analyses, results for chloroform and carbon tetrachloride in SVE-2-3 and SVE-A were qualified as estimated (J).

- The result for carbon tetrachloride in the less diluted analysis of SVE-2-3 was qualified as estimated (J) because the reported concentration exceeded the laboratory-established calibration range of the instrument. The result for carbon tetrachloride only was taken from the more diluted analysis of this sample. The Laboratory Analytical Data Form for both analyses of VMW-2-3 are included in Attachment B. However, the Laboratory Analytical Data Form for the less diluted analysis of this sample was hybridized to include the result for carbon tetrachloride recommended for use by the validator. The Laboratory Analytical Data Form for the more diluted analysis of VMW-2-3 was marked "Do Not Use" for clarity.

All laboratory applied "E" and "D" qualifiers were removed by the validator.

This validation effort is based on the data as provided by the laboratory. Software manipulation cannot be routinely detected during validation and is outside the scope of this review.

This validation report should be added to the data package for all future distributions of TO-15 data reported in SDG 200-22206.

Eden Environmental, LLC

ATTACHMENT A

LABORATORY ANALYTICAL DATA FORMS

Client: Ertec

Job Number: 200-22206-1
Sdg Number: 200-22206

Client Sample ID: **STACK-3**

Lab Sample ID: 200-22206-2
Client Matrix: Air

Date Sampled: 05/05/2014 1422
Date Received: 05/06/2014 1030

TO-15 Volatile Organic Compounds in Ambient Air

Analysis Method:	TO-15	Analysis Batch:	200-71821	Instrument ID:	CHB.i
Prep Method:	Summa Can	Prep Batch:	N/A	Lab File ID:	7447_011.D
Dilution:	252			Initial Weight/Volume:	51 mL
Analysis Date:	05/08/2014 1858			Final Weight/Volume:	200 mL
Prep Date:	05/08/2014 1858			Injection Volume:	5 mL

Analyte	Result (ppb v/v)	Qualifier	MDL	RL
Acetone	1300	U	320	1300
Methylene Chloride	130	U	32	130
Chloroform	290		6.3	50
Carbon tetrachloride	4900		5.3	50

Analyte	Result (ug/m3)	Qualifier	MDL	RL
Acetone	3000	U	750	3000
Methylene Chloride	440	U	110	440
Chloroform	1400		31	250
Carbon tetrachloride	31000		33	320

Client: Ertec

Job Number: 200-22206-1
Sdg Number: 200-22206

Client Sample ID: **VMW-1-3**

Lab Sample ID: 200-22206-4
Client Matrix: Air

Date Sampled: 05/05/2014 1435
Date Received: 05/06/2014 1030

TO-15 Volatile Organic Compounds in Ambient Air

Analysis Method:	TO-15	Analysis Batch:	200-71821	Instrument ID:	CHB.i
Prep Method:	Summa Can	Prep Batch:	N/A	Lab File ID:	7447_014.D
Dilution:	11700			Initial Weight/Volume:	60 mL
Analysis Date:	05/08/2014 2133			Final Weight/Volume:	200 mL
Prep Date:	05/08/2014 2133			Injection Volume:	5 mL

Analyte	Result (ppb v/v)	Qualifier	MDL	RL
Acetone	59000	U	15000	59000
Methylene Chloride	5900	U	1500	5900
Chloroform	6100		290	2300
Carbon tetrachloride	240000		250	2300

Analyte	Result (ug/m3)	Qualifier	MDL	RL
Acetone	140000	U	35000	140000
Methylene Chloride	20000	U	5100	20000
Chloroform	30000		1400	11000
Carbon tetrachloride	1500000		1500	15000

Client: Ertec

Job Number: 200-22206-1
Sdg Number: 200-22206

Client Sample ID: VMW-2-3

Lab Sample ID: 200-22206-5
Client Matrix: Air

Date Sampled: 05/05/2014 1440
Date Received: 05/06/2014 1030

TO-15 Volatile Organic Compounds in Ambient Air

Analysis Method:	TO-15	Analysis Batch:	200-71821	Instrument ID:	CHB.i
Prep Method:	Summa Can	Prep Batch:	N/A	Lab File ID:	7447_015.D
Dilution:	7240			Initial Weight/Volume:	84 mL
Analysis Date:	05/08/2014 2226			Final Weight/Volume:	200 mL
Prep Date:	05/08/2014 2226			Injection Volume:	5 mL

Analyte		Result (ppb v/v)		Qualifier	MDL	RL
Acetone		36000		U	9100	36000
Methylene Chloride		3600		U	910	3600
Chloroform		28000	J		180	1400
Carbon tetrachloride	1,000,000	~~700000~~	J	~~E~~	~~130~~ 580	~~1400~~ 5500

Analyte		Result (ug/m3)	Qualifier	MDL	RL
Acetone		86000	U	22000	86000
Methylene Chloride		13000	U	3100	13000
Chloroform		140000		880	7100
Carbon tetrachloride	6,400,000	~~4480000~~	~~E~~	~~960~~ 3600	~~9100~~ 35000

ccc 05/29/14

Client: Ertec

Job Number: 200-22206-1
Sdg Number: 200-22206

Client Sample ID: VMW-2-3 DL use 05/29/14

Lab Sample ID: 200-22206-5
Client Matrix: Air

Date Sampled: 05/05/2014 1440
Date Received: 05/06/2014 1030

TO-15 Volatile Organic Compounds in Ambient Air

Analysis Method:	TO-15	Analysis Batch:	200-71912	Instrument ID:	CHB.i
Prep Method:	Summa Can	Prep Batch:	N/A	Lab File ID:	7474_005.D
Dilution:	27600			Initial Weight/Volume:	22 mL
Analysis Date:	05/09/2014 1426	Run Type:	DL	Final Weight/Volume:	200 mL
Prep Date:	05/09/2014 1426			Injection Volume:	5 mL

Analyte	Result (ppb v/v)	Qualifier	MDL	RL
Acetone	140000	U	35000	140000
Methylene Chloride	14000	U	3500	14000
Chloroform	36000	U	690	5500
Carbon tetrachloride	1000000	U	580	5500

Analyte	Result (ug/m3)	Qualifier	MDL	RL
Acetone	330000	U	82000	330000
Methylene Chloride	48000	U	12000	48000
Chloroform	170000	U	3400	27000
Carbon tetrachloride	6400000	U	3600	35000

Do Not Use 05/29/14

Client: Ertec

Job Number: 200-22206-1
Sdg Number: 200-22206

Client Sample ID: **VMW-3C-3**

Lab Sample ID: 200-22206-7
Client Matrix: Air

Date Sampled: 05/05/2014 1445
Date Received: 05/06/2014 1030

TO-15 Volatile Organic Compounds in Ambient Air

Analysis Method:	TO-15	Analysis Batch:	200-71821	Instrument ID:	CHB.i
Prep Method:	Summa Can	Prep Batch:	N/A	Lab File ID:	7447_017.D
Dilution:	4240			Initial Weight/Volume:	38 mL
Analysis Date:	05/09/2014 0010			Final Weight/Volume:	200 mL
Prep Date:	05/09/2014 0010			Injection Volume:	5 mL

Analyte	Result (ppb v/v)	Qualifier	MDL	RL
Acetone	21000	U	5300	21000
Methylene Chloride	2100	U	530	2100
Chloroform	4900		110	850
Carbon tetrachloride	100000		89	850

Analyte	Result (ug/m3)	Qualifier	MDL	RL
Acetone	50000	U	13000	50000
Methylene Chloride	7400	U	1800	7400
Chloroform	24000		520	4100
Carbon tetrachloride	660000		560	5300

Client: Ertec

Job Number: 200-22206-1
Sdg Number: 200-22206

Client Sample ID: **TB050514**

Lab Sample ID: 200-22206-1
Client Matrix: Air

Date Sampled: 05/05/2014 0000
Date Received: 05/06/2014 1030

TO-15 Volatile Organic Compounds in Ambient Air

Analysis Method:	TO-15	Analysis Batch:	200-71821	Instrument ID:	CHB.i
Prep Method:	Summa Can	Prep Batch:	N/A	Lab File ID:	7447_010.D
Dilution:	1.0			Initial Weight/Volume:	200 mL
Analysis Date:	05/08/2014 1806			Final Weight/Volume:	200 mL
Prep Date:	05/08/2014 1806			Injection Volume:	5 mL

Analyte	Result (ppb v/v)	Qualifier	MDL	RL
Acetone	5.0	U	1.3	5.0
Methylene Chloride	0.50	U	0.13	0.50
Chloroform	0.20	U	0.025	0.20
Carbon tetrachloride	0.20	U	0.021	0.20

Analyte	Result (ug/m3)	Qualifier	MDL	RL
Acetone	12	U	3.0	12
Methylene Chloride	1.7	U	0.43	1.7
Chloroform	0.98	U	0.12	0.98
Carbon tetrachloride	1.3	U	0.13	1.3

Client: Ertec

Job Number: 200-22206-1
Sdg Number: 200-22206

Client Sample ID: **SVE-A**

Lab Sample ID: 200-22206-6
Client Matrix: Air

Date Sampled: 05/05/2014 1440
Date Received: 05/06/2014 1030

TO-15 Volatile Organic Compounds in Ambient Air

Analysis Method:	TO-15	Analysis Batch:	200-71821	Instrument ID:	CHB.i
Prep Method:	Summa Can	Prep Batch:	N/A	Lab File ID:	7447_016.D
Dilution:	10000			Initial Weight/Volume:	60 mL
Analysis Date:	05/08/2014 2318			Final Weight/Volume:	200 mL
Prep Date:	05/08/2014 2318			Injection Volume:	5 mL

Analyte	Result (ppb v/v)	Qualifier	MDL	RL
Acetone	50000	U	13000	50000
Methylene Chloride	5000	U	1300	5000
Chloroform	7800	J	250	2000
Carbon tetrachloride	200000	J	210	2000

Analyte	Result (ug/m3)	Qualifier	MDL	RL
Acetone	120000	U	30000	120000
Methylene Chloride	17000	U	4300	17000
Chloroform	38000		1200	9800
Carbon tetrachloride	1200000		1300	13000

mm 06/29/14

Client: Ertec

Job Number: 200-22206-1
Sdg Number: 200-22206

Client Sample ID: **INLET-3**

Lab Sample ID: 200-22206-3
Client Matrix: Air

Date Sampled: 05/05/2014 1427
Date Received: 05/06/2014 1030

TO-15 Volatile Organic Compounds in Ambient Air

Analysis Method:	TO-15	Analysis Batch:	200-71821	Instrument ID:	CHB.i
Prep Method:	Summa Can	Prep Batch:	N/A	Lab File ID:	7447_013.D
Dilution:	6430			Initial Weight/Volume:	29 mL
Analysis Date:	05/08/2014 2042			Final Weight/Volume:	200 mL
Prep Date:	05/08/2014 2042			Injection Volume:	5 mL

Analyte	Result (ppb v/v)	Qualifier	MDL	RL
Acetone	32000	U	8000	32000
Methylene Chloride	3200	U	800	3200
Chloroform	5000		160	1300
Carbon tetrachloride	130000		140	1300

Analyte	Result (ug/m3)	Qualifier	MDL	RL
Acetone	76000	U	19000	76000
Methylene Chloride	11000	U	2800	11000
Chloroform	24000		780	6300
Carbon tetrachloride	830000		850	8100

Eden Environmental, LLC

ATTACHMENT B

EPA REGION II QUALIFIERS AND THEIR DEFINITIONS

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

N - The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."

NJ - The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.

UJ - The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

R - The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

The "R" qualifier indicates the analysis is invalid. Rejected values should not appear on data tables because they cannot be relied upon, even as a last resort.

Eden Environmental, LLC

June 18, 2014

Ms. Wanda Morales
ERTEC
Amur St. A - #5
Reparto Landrau
Rio Piedras, PR 00921

RE: Data Validation Report for the SVE TO-15 Air Monitoring of the Pfizer Arecibo Site

Dear Wanda,

Enclosed is the validation report for the air samples collected on June 3, 2014, from the Pfizer Arecibo Site. The following samples were submitted to TestAmerica in Burlington, Vermont and were assigned to Sample Delivery Group (SDG) 200-22637:

STACK-4	INLET-4	VMW-1-4
VMW-2-4	VMW-3C-4	

The data package was received on June 16, 2014. The laboratory performed well, and no qualification of results were necessary.

All samples were analyzed for acetone, methylene chloride, chloroform, and carbon tetrachloride in conformance with the specifications of the USEPA Compendium Method TO-15. The validation effort was restricted to the reported results and supporting data for these compounds.

Data validation was performed in conformance with the specifications of the EPA Region II Standard Operating Procedure (Volatile Organic Analysis of Ambient Air in Canisters by Method TO-15," SOP HW-31 Revision 4, October, 2006). When necessary, professional judgment was applied and appropriately noted in the applicable section of the attached report. The validation effort for these data has the label Stage 4 Validation Manual (S4VM).

Anomalies detected during the validation effort (if any) are included in the appropriate section of the attached report. The Laboratory Analytical Data Forms with all qualifiers resulting from the validation effort (if any were necessary) are included in Attachment A. The EPA Region II qualifiers and their definitions are included in Attachment B.

If you have any questions regarding this report, please give me a call at 225-355-0163 or contact me by e-mail at engrid@eden-env.com

Best Regards,

Engrid Carpenter

Engrid S. Carpenter
President

Eden Environmental, LLC

ANALYTICAL DATA VALIDATION

ERTEC JOB DESCRIPTION – PFIZER ARECIBO – SVE

ERTEC JOB NUMBER –145288

ORGANIC ANALYSIS DATA

Prepared by: TestAmerica Laboratory, Burlington Vermont
Sample Delivery Group: 200-22637
Selected Volatile Organic Compounds in Air Samples

VALIDATION REPORT

Prepared by: Eden Environmental, LLC
Eden Project Number 13103

Date: June 18, 2014

13103/ESC/CEW
200-22637-TO-15

Eden Environmental, LLC

INTRODUCTION

The following samples were collected on June 3, 2014, submitted to TestAmerica in Burlington, Vermont, and assigned to Sample Delivery Group (SDG) 200-22637:

STACK-4	INLET-4	VMW-1-4
VMW-2-4	VMW-3C-4	

All samples were analyzed for acetone, methylene chloride, chloroform, and carbon tetrachloride using USEPA Method TO-15. The validation effort was restricted to the reported results and supporting data for these compounds.

Data validation was performed in conformance with the specifications of the EPA Region II Standard Operating Procedure (Volatile Organic Analysis of Ambient Air in Canisters by Method TO-15," SOP HW-31 Revision 4, October, 2006). When necessary, professional judgment was applied and appropriately noted in the applicable section of the attached report. The validation effort for these data has the label Stage 4 Validation Manual (S4VM).

Anomalies detected during the validation effort (if any) are included in the appropriate section of the attached report. The Laboratory Analytical Data Forms with all qualifiers resulting from the validation effort (if any were necessary) are included in Attachment A. The EPA Region II qualifiers and their definitions are included in Attachment B.

I. Holding Times, Preservation, and Sample Integrity

All TO-15 analyses were performed within holding time. A copy of the Laboratory Login Sample Receipt Checklist noted that all samples were in good condition with container custody seals intact. Therefore, all requirements for holding times and sample integrity were met. No physical preservation requirements are specified for Summa® canisters.

II. GC/MS Instrument Performance Checks

Results were reported for two bromofluorobenzene (BFB) instrument performance checks. Requirements for both instrument performance checks were met.

III. Calibration

These samples were analyzed on a single GC/MS system, which was identified as "CHG." No evidence was presented in the data package to indicate that manual integrations were performed on any project-specified target compounds or on any of the internal standards in any of the calibration standards.

A. Initial Calibration (IC) and Initial Calibration Verification (ICV)

An IC was established on May 21, 2014. An ICV was analyzed immediately following the IC. EPA Region II-specified acceptance criteria were met for all of these standards.

B. Continuing Verification (CV)

Documentation of a CV standard associated with these sample analyses was present in the data package. All EPA Region II-specified acceptance criteria were met for this standard.

IV. Blanks

A laboratory blank was analyzed in the analytical sequence containing all of the site samples. No project-specified target analytes were detected in the laboratory blank.

No field-submitted blank was included in this data set.

V. Surrogate Recoveries

The use of a surrogate compound is not addressed in Method TO-15. A surrogate compound was not employed in the analyses of these samples.

VI. Laboratory Check Standard (Audit Accuracy Standard)

A 10 ppbv laboratory check standard (identified as LCS) was analyzed in the analytical sequence containing the reported samples. The LCS was spiked with all of the project-specified target analytes. Recoveries of the target analytes in the LCS were within the quality control limits specified by the validation guidance document.

VII. Laboratory Replicate Analyses

STACK-4 was analyzed as a laboratory replicate. Reproducibility between the positively paired results for chloroform and carbon tetrachloride was within the laboratory-specified acceptance limits. Acetone and methylene chloride were not detected in either analysis of this sample; therefore, no further quantitative evaluation of precision could be made from these data.

VIII. Field Duplicates

Collection of true field duplicates is not feasible for air samples; therefore, a better description of these quality control samples would be co-located samples. The validation guidance document does not provide an acceptance criterion for RPDs between reported concentrations in "field duplicate" samples. For the purpose of this validation effort, a maximum acceptance limit of 100 RPD was used to define acceptable agreement between reported results in the co-located samples. Results with RPD values greater than 100 RPD should be used with caution as the concentration and source of these compounds in the reported samples is uncertain.

No co-located samples were included in this sample set.

IX. Internal Standard Performance

The validator confirmed that the areas and retention times of all three internal standards were within the method-specified acceptance limits for the reported site and quality control analyses.

X. Target Compound Identification

When detected, the target analyte was correctly identified with acceptable supporting mass spectra present in the data package.

XI. Compound Quantitation and Reporting Limits (RLs)

A RL of ≤0.50 ppbv is a required performance criterion for this project. The low concentration standard in the IC was 0.50 ppbv for methylene chloride, 0.20 ppbv for chloroform, and 0.04 ppbv for carbon tetrachloride. The unadjusted RLs are equivalent to or higher than the low concentration standard used to establish the IC and are supported by the reported data.

The low concentration IC standard for acetone was 5.0 ppbv, which is also the RL used for this analyte and supported by the reported data. The RL for acetone does not meet the performance criterion for this project, but does reflect the best efforts of the laboratory.

XII. Tentatively Identified Compounds (TICs)

Library searches were not requested for these samples.

XIII. Documentation

All of the laboratory sample receipt information was provided on the laboratory-generated Login Sample Receipt Checklist, which confirmed that all samples were properly documented and shipped in custody sealed containers.

A copy of the FedEx airbill was included in the data package to document the transfer of the samples from the field to the laboratory.

The Laboratory Analytical Data Forms also include a column identified as MDL (method detection limit). MDLs of 1.3 ppbv for acetone, 0.13 ppbv for methylene chloride, 0.025 ppbv for chloroform, and 0.021 ppbv for carbon tetrachloride are reported, but these MDLs are not supported by the data as received. Therefore, it is recommended that the RLs rather than the MDLs be used as the lowest support limit of detection.

XIV. Overall Assessment

Based on the findings of the validation effort, all samples results were determined to be valid as reported. No qualifiers were added by the validator to the laboratory reported results.

This validation effort is based on the data as provided by the laboratory. Software manipulation cannot be routinely detected during validation and is outside the scope of this review.

This validation report should be added to the data package for all future distributions of TO-15 data reported in SDG 200-22637.

Eden Environmental, LLC

ATTACHMENT A

LABORATORY ANALYTICAL DATA FORMS

Client: Ertec

Job Number: 200-22637-1
Sdg Number: 200-22637

Client Sample ID: **VMW-1-4**

Lab Sample ID: 200-22637-1
Client Matrix: Air

Date Sampled: 06/03/2014 0932
Date Received: 06/04/2014 1030

TO-15 Volatile Organic Compounds in Ambient Air

Analysis Method:	TO-15	Analysis Batch:	200-73187	Instrument ID:	CHG.i
Prep Method:	Summa Can	Prep Batch:	N/A	Lab File ID:	7931_006.D
Dilution:	2150			Initial Weight/Volume:	20 mL
Analysis Date:	06/06/2014 1552			Final Weight/Volume:	200 mL
Prep Date:	06/06/2014 1552			Injection Volume:	200 mL

Analyte	Result (ppb v/v)	Qualifier	MDL	RL
Acetone	11000	U	2700	11000
Methylene Chloride	1100	U	270	1100
Chloroform	4400		54	430
Carbon tetrachloride	57000		45	430

Analyte	Result (ug/m3)	Qualifier	MDL	RL
Acetone	26000	U	6400	26000
Methylene Chloride	3700	U	930	3700
Chloroform	22000		260	2100
Carbon tetrachloride	360000		280	2700

Client: Ertec

Job Number: 200-22637-1
Sdg Number: 200-22637

Client Sample ID: **VMW-2-4**

Lab Sample ID: 200-22637-2
Client Matrix: Air

Date Sampled: 06/03/2014 0940
Date Received: 06/04/2014 1030

TO-15 Volatile Organic Compounds In Ambient Air

Analysis Method:	TO-15	Analysis Batch:	200-73187	Instrument ID:	CHG.i
Prep Method:	Summa Can	Prep Batch:	N/A	Lab File ID:	7931_007.D
Dilution:	1730			Initial Weight/Volume:	21 mL
Analysis Date:	06/06/2014 1639			Final Weight/Volume:	200 mL
Prep Date:	06/06/2014 1639			Injection Volume:	200 mL

Analyte	Result (ppb v/v)	Qualifier	MDL	RL
Acetone	8700	U	2200	8700
Methylene Chloride	870	U	220	870
Chloroform	4900		43	350
Carbon tetrachloride	64000		36	350

Analyte	Result (ug/m3)	Qualifier	MDL	RL
Acetone	21000	U	5100	21000
Methylene Chloride	3000	U	750	3000
Chloroform	24000		210	1700
Carbon tetrachloride	400000		230	2200

Client: Ertec

Job Number: 200-22637-1
Sdg Number: 200-22637

Client Sample ID: VMW-3C-4

Lab Sample ID: 200-22637-3
Client Matrix: Air

Date Sampled: 06/03/2014 0946
Date Received: 06/04/2014 1030

TO-15 Volatile Organic Compounds in Ambient Air

Analysis Method:	TO-15	Analysis Batch:	200-73187	Instrument ID:	CHG.i
Prep Method:	Summa Can	Prep Batch:	N/A	Lab File ID:	7931_008.D
Dilution:	1530			Initial Weight/Volume:	28 mL
Analysis Date:	06/06/2014 1726			Final Weight/Volume:	200 mL
Prep Date:	06/06/2014 1726			Injection Volume:	200 mL

Analyte	Result (ppb v/v)	Qualifier	MDL	RL
Acetone	7700	U	1900	7700
Methylene Chloride	770	U	190	770
Chloroform	2400		38	310
Carbon tetrachloride	39000		32	310

Analyte	Result (ug/m3)	Qualifier	MDL	RL
Acetone	18000	U	4500	18000
Methylene Chloride	2700	U	660	2700
Chloroform	12000		190	1500
Carbon tetrachloride	240000		200	1900

Client: Ertec

Job Number: 200-22637-1
Sdg Number: 200-22637

Client Sample ID: **INLET-4**

Lab Sample ID: 200-22637-4
Client Matrix: Air

Date Sampled: 06/03/2014 0954
Date Received: 06/04/2014 1030

TO-15 Volatile Organic Compounds in Ambient Air

Analysis Method:	TO-15	Analysis Batch:	200-73187	Instrument ID:	CHG.i
Prep Method:	Summa Can	Prep Batch:	N/A	Lab File ID:	7931_009.D
Dilution:	1470			Initial Weight/Volume:	20 mL
Analysis Date:	06/06/2014 1813			Final Weight/Volume:	200 mL
Prep Date:	06/06/2014 1813			Injection Volume:	200 mL

Analyte	Result (ppb v/v)	Qualifier	MDL	RL
Acetone	7400	U	1800	7400
Methylene Chloride	740	U	180	740
Chloroform	3300		37	290
Carbon tetrachloride	47000		31	290

Analyte	Result (ug/m3)	Qualifier	MDL	RL
Acetone	17000	U	4400	17000
Methylene Chloride	2600	U	640	2600
Chloroform	16000		180	1400
Carbon tetrachloride	300000		190	1800

Client: Ertec

Job Number: 200-22637-1
Sdg Number: 200-22637

Client Sample ID: STACK-4

Lab Sample ID: 200-22637-5
Client Matrix: Air

Date Sampled: 06/03/2014 1000
Date Received: 06/04/2014 1030

TO-15 Volatile Organic Compounds in Ambient Air

Analysis Method:	TO-15	Analysis Batch:	200-73187	Instrument ID:	CHG.i
Prep Method:	Summa Can	Prep Batch:	N/A	Lab File ID:	7931_010.D
Dilution:	380			Initial Weight/Volume:	46 mL
Analysis Date:	06/06/2014 1900			Final Weight/Volume:	200 mL
Prep Date:	06/06/2014 1900			Injection Volume:	200 mL

Analyte	Result (ppb v/v)	Qualifier	MDL	RL
Acetone	1900	U	480	1900
Methylene Chloride	190	U	48	190
Chloroform	470		9.5	76
Carbon tetrachloride	7400		8.0	76

Analyte	Result (ug/m3)	Qualifier	MDL	RL
Acetone	4500	U	1100	4500
Methylene Chloride	660	U	160	660
Chloroform	2300		46	370
Carbon tetrachloride	46000		50	480

ATTACHMENT B

EPA REGION II QUALIFIERS AND THEIR DEFINITIONS

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

N - The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."

NJ - The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.

UJ - The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

R - The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

Eden Environmental, LLC

September 3, 2014

Ms. Wanda Morales
ERTEC
Amur St. A - #5
Reparto Landrau
Rio Piedras, PR 00921

RE: Data Validation Report for the SVE TO-15 Air Monitoring of the Pfizer Arecibo Site

Dear Wanda,

Enclosed is the validation report for the air samples collected on August 5, 2014, from the Pfizer Arecibo Site. The following samples were submitted to TestAmerica in Burlington, Vermont and were assigned to Sample Delivery Group (SDG) 200-23499:

STACK-5	INLET-5	SVE-A
VMW-1-5	VMW-2-5	VMW-3C-5
TB-080514		

The data package was received on August 26, 2014. The laboratory performed well, but some qualifications of results were necessary.

All samples were analyzed for acetone, methylene chloride, chloroform, and carbon tetrachloride in conformance with the specifications of the USEPA Compendium Method TO-15. The validation effort was restricted to the reported results and supporting data for these compounds.

Data validation was performed in conformance with the specifications of the EPA Region II Standard Operating Procedure (Volatile Organic Analysis of Ambient Air in Canisters by Method TO-15," SOP HW-31 Revision 4, October, 2006). When necessary, professional judgment was applied and appropriately noted in the applicable section of the attached report. The validation effort for these data has the label Stage 4 Validation Manual (S4VM).

Anomalies detected during the validation effort (if any) are included in the appropriate section of the attached report. The Laboratory Analytical Data Forms with all qualifiers resulting from the validation effort (if any were necessary) are included in Attachment A. The EPA Region II qualifiers and their definitions are included in Attachment B.

If you have any questions regarding this report, please give me a call at 225-355-0163 or contact me by e-mail at engrid@eden-env.com

Best Regards,

Engrid Carpenter

Engrid S. Carpenter
President

Eden Environmental, LLC

ANALYTICAL DATA VALIDATION

ERTEC JOB DESCRIPTION – PFIZER ARECIBO – SVE

ERTEC JOB NUMBER –14-5288

ORGANIC ANALYSIS DATA

Prepared by: TestAmerica Laboratory, Burlington Vermont
Sample Delivery Group: 200-23499
Selected Volatile Organic Compounds in Air Samples

VALIDATION REPORT

Prepared by: Eden Environmental, LLC
Eden Project Number 13103

Date: September 3, 2014

13103/ESC/CEW
200-23499-TO-15

Eden Environmental, LLC

ANALYTICAL DATA VALIDATION

ERTEC JOB DESCRIPTION – PFIZER ARECIBO – SVE

ERTEC JOB NUMBER –14-5288

ORGANIC ANALYSIS DATA

Prepared by: TestAmerica Laboratory, Burlington Vermont
Sample Delivery Group: 200-23499
Selected Volatile Organic Compounds in Air Samples

VALIDATION REPORT

Prepared by: Eden Environmental, LLC
Eden Project Number 13103

Date: September 3, 2014

13103/ESC/CEW
200-23499-TO-15

Eden Environmental, LLC

INTRODUCTION

The following samples were collected on August 5, 2014, submitted to TestAmerica in Burlington, Vermont, and assigned to Sample Delivery Group (SDG) 200-23499:

STACK-5	INLET-5	SVE-A
VMW-1-5	VMW-2-5	VMW-3C-5
TB-080514		

Data validation was performed in conformance with the specifications of the EPA Region II Standard Operating Procedure (Volatile Organic Analysis of Ambient Air in Canisters by Method TO-15," SOP HW-31 Revision 4, October, 2006). When necessary, professional judgment was applied and appropriately noted in the applicable section of the attached report. The validation effort for these data has the label Stage 4 Validation Manual (S4VM).

Anomalies detected during the validation effort (if any) are included in the appropriate section of the attached report. The Laboratory Analytical Data Forms with all qualifiers resulting from the validation effort (if any were necessary) are included in Attachment A. The EPA Region II qualifiers and their definitions are included in Attachment B.

I. Holding Times, Preservation, and Sample Integrity

All TO-15 analyses were performed within holding time. A copy of the Laboratory Login Sample Receipt Checklist noted that all samples were in good condition with container custody seals intact. Therefore, all requirements for holding times and sample integrity were met. No physical preservation requirements are specified for Summa® canisters.

II. GC/MS Instrument Performance Checks

Results were reported for four bromofluorobenzene (BFB) instrument performance checks. Requirements for all four instrument performance checks were met.

III. Calibration

These samples were analyzed on a two gas chromatography/mass spectrometry (GC/MS) systems, which were identified as "CHB" and "CHG." The area for chloroform in the 0.2 ppbv standard of the initial calibration performed on instrument CHG was manually integrated. Documentation of this integration was provided in the data package and support that it was performed properly and was correctly incorporated into the associated quantitation report. No evidence was presented in the data package to indicate that manual integrations were performed on any other project-specified target compounds or on any of the internal standards in any of the calibration standards.

A. Initial Calibration (IC) and Initial Calibration Verification (ICV)

ICs were established on March 14, 2014, on instrument CHB and on August 13, 2014, on instrument CHG. An ICV was analyzed immediately following each IC. EPA Region II-specified acceptance criteria were met for all of these standards.

B. Continuing Verification (CV)

Documentation of a CV standard performed on each instrument was present in the data package. All reported sample analyses were associated with one or the other of these standards. All EPA Region II-specified acceptance criteria were met for both of these standards.

IV. Blanks

A laboratory blank was analyzed in each analytical sequence containing the site samples. No project-specified target analytes were detected in either laboratory blank.

A trip blank (TB-080514) was submitted with the samples included in this data set. No project-specified target analytes were detected in TB-080514.

V. Surrogate Recoveries

The use of a surrogate compound is not addressed in Method TO-15. A surrogate compound was not employed in the analyses of these samples.

VI. Laboratory Check Standard (Audit Accuracy Standard)

A 10 ppbv laboratory check standard (identified as LCS) was analyzed in each analytical sequence containing the reported samples. Each LCS was spiked with all of the project-specified target analytes. Recoveries of the target analytes in both LCSs were within the quality control limits specified by the validation guidance document.

VII. Laboratory Replicate Analyses

STACK-5 was analyzed as a laboratory replicate. Reproducibility between the positively paired results for acetone, chloroform, and carbon tetrachloride was within the laboratory-specified acceptance limits. Methylene chloride was not detected in either analysis of this sample; therefore, no further quantitative evaluation of precision could be made from these data.

VIII. Field Duplicates

Collection of true field duplicates is not feasible for air samples; therefore, a better description of these quality control samples would be co-located samples. The validation guidance document does not provide an acceptance criterion for RPDs between reported concentrations in "field duplicate" samples. For the purpose of this validation effort, a maximum acceptance limit of 100 RPD was used to define acceptable agreement between reported results in the co-located samples. Results with RPD values greater than 100 RPD should be used with caution as the concentration and source of these compounds in the reported samples is uncertain.

SVE-A was collected as a co-located sample of VMW-3C-5. Acceptable reproducibility between concentrations reported for chloroform and carbon tetrachloride was observed. Acetone and methylene chloride were not detected in either of these samples; therefore, no further quantitative evaluation of precision could be made from these data.

IX. Internal Standard Performance

The validator confirmed that the areas and retention times of all three internal standards were within the method-specified acceptance limits for the reported site and quality control analyses.

X. Target Compound Identification

When detected, the target analyte was correctly identified with acceptable supporting mass spectra present in the data package.

XI. Compound Quantitation and Reporting Limits (RLs)

A RL of ≤0.50 ppbv is a required performance criterion for this project. The low concentration standard in the IC was 0.50 ppbv for methylene chloride, 0.20 ppbv for chloroform, and 0.04 ppbv for carbon tetrachloride. The unadjusted RLs are equivalent to or higher than the low concentration standard used to establish the IC and are supported by the reported data.

The low concentration IC standard for acetone was 5.0 ppbv, which is also the RL used for this analyte and supported by the reported data. The RL for acetone does not meet the performance criterion for this project, but does reflect the best efforts of the laboratory.

Concentrations of carbon tetrachloride in INLET-5, SVE-A, VMW-2-5, and VMW-3C-5 exceeded the laboratory-established calibration range of the instrument. Results for this compound in the less diluted analyses of these samples were qualified as estimated (J). A more diluted analysis of each of these samples was performed and was within the calibration range of the instrument. Only the results for carbon tetrachloride were taken from INLET-5DL, SVE-ADL, VMW-2-5DL, and VMW-3C-5DL. All other results were taken from the less diluted analyses of these samples. The laboratory-applied "E" and "D" qualifiers used to indicate results that exceeded the laboratory-established calibration range of the instrument and results from a more diluted analysis, respectively, were removed by the validator. The Laboratory Analytical Data Forms for both analyses of INLET-5, SVE-A, VMW-2-5, and VMW-3C-5 are included in Attachment B. However, the Laboratory Analytical Data Forms for the less diluted analyses of these samples were hybridized to include the results for carbon tetrachloride recommended for use by the validator. The Laboratory Data Forms from the more diluted analyses of these samples have been marked "Do Not Use" for clarity.

The laboratory appropriately applied "J" qualifiers to indicate estimated concentrations between the method detection limit (MDL) and the RL. These qualifiers were not removed by the validator.

XII. Tentatively Identified Compounds (TICs)

Library searches were not requested for these samples.

XIII. Documentation

All of the laboratory sample receipt information was provided on the laboratory-generated Login Sample Receipt Checklist, which confirmed that all samples were properly documented and shipped in custody sealed containers.

A copy of the FedEx airbill was included in the data package to document the transfer of the samples from the field to the laboratory.

The Laboratory Analytical Data Forms also include a column identified as MDL. MDLs of 1.3 ppbv for acetone, 0.13 ppbv for methylene chloride, 0.025 ppbv for chloroform, and 0.021 ppbv for carbon tetrachloride are reported, but these MDLs are not supported by the data as received. Therefore, it is recommended that the RLs rather than the MDLs be used as the lowest support limit of detection.

XIV. Overall Assessment

Findings of the validation effort resulted in the following qualifications of samples results:

- Results for carbon tetrachloride in the less diluted analyses of INLET-5, SVE-A, VMW-2-5, and VMW-3C-5 were qualified as estimated (J) because the reported concentrations exceeded the laboratory-established calibration range of the instrument. Results for carbon tetrachloride only were taken from the more diluted analyses of these samples. The Laboratory Analytical Data Forms for both analyses of INLET-5, SVE-A, VMW-2-5, and VMW-3C-5 are included in Attachment B. However, the Laboratory Analytical Data Form for the less diluted analyses of these samples were hybridized to include the results for carbon tetrachloride recommended for use by the validator. The Laboratory Analytical Data Forms for the more diluted analyses of these samples were marked "Do Not Use" for clarity.

All laboratory applied "E" and "D" qualifiers were removed by the validator. The laboratory appropriately applied "J" qualifiers to indicate estimated concentrations between the MDL and the RL. These qualifiers were not removed by the validator.

This validation effort is based on the data as provided by the laboratory. Software manipulation cannot be routinely detected during validation and is outside the scope of this review.

This validation report should be added to the data package for all future distributions of TO-15 data reported in SDG 200-23499.

Eden Environmental, LLC

ATTACHMENT A

LABORATORY ANALYTICAL DATA FORMS

Client: Ertec

Job Number: 200-23499-1
Sdg Number: 200-23499

Client Sample ID: **STACK-5**

Lab Sample ID: 200-23499-7
Client Matrix: Air

Date Sampled: 08/05/2014 1503
Date Received: 08/06/2014 1030

TO-15 Volatile Organic Compounds in Ambient Air

Analysis Method:	TO-15	Analysis Batch:	200-76161	Instrument ID:	CHG.i
Prep Method:	Summa Can	Prep Batch:	N/A	Lab File ID:	9040_023.D
Dilution:	2.0			Initial Weight/Volume:	149 mL
Analysis Date:	08/17/2014 1307			Final Weight/Volume:	200 mL
Prep Date:	08/17/2014 1307			Injection Volume:	200 mL

Analyte	Result (ppb v/v)	Qualifier	MDL	RL
Acetone	4.6	J	2.5	10
Methylene Chloride	1.0	U	0.25	1.0
Chloroform	2.3		0.050	0.40
Carbon tetrachloride	43		0.042	0.40

Analyte	Result (ug/m3)	Qualifier	MDL	RL
Acetone	11	J	5.9	24
Methylene Chloride	3.5	U	0.87	3.5
Chloroform	11		0.24	2.0
Carbon tetrachloride	270		0.26	2.5

Client: Ertec

Job Number: 200-23499-1
Sdg Number: 200-23499

Client Sample ID: **INLET-5**

Lab Sample ID: 200-23499-6
Client Matrix: Air

Date Sampled: 08/05/2014 1455
Date Received: 08/06/2014 1030

TO-15 Volatile Organic Compounds in Ambient Air

Analysis Method:	TO-15	Analysis Batch:	200-76127	Instrument ID:	CHB.i
Prep Method:	Summa Can	Prep Batch:	N/A	Lab File ID:	9035_019.D
Dilution:	3070, 7270 ere 09/03/14			Initial Weight/Volume:	25 mL
Analysis Date:	08/16/2014 0155			Final Weight/Volume:	200 mL
Prep Date:	08/16/2014 0155			Injection Volume:	5 mL

Analyte	Result (ppb v/v)	Qualifier	MDL	RL
Acetone	15000	U	3800	15000
Methylene Chloride	1500	U	380	1500
Chloroform	6900		77	610
Carbon tetrachloride	~~180000~~ 190000	~~E~~	~~64~~ 150	~~610~~ 1500

Analyte	Result (ug/m3)	Qualifier	MDL	RL
Acetone	36000	U	9100	36000
Methylene Chloride	5300	U	1300	5300
Chloroform	34000		370	3000
Carbon tetrachloride	~~1100000~~ 1200000	~~E~~	~~410~~ 960	~~3900~~ 9100

ere 09/03/14

Client: Ertec

Job Number: 200-23499-1
Sdg Number: 200-23499

Client Sample ID: INLET-5 DL esc 09/03/14

Lab Sample ID: 200-23499-6
Client Matrix: Air

Date Sampled: 08/05/2014 1455
Date Received: 08/06/2014 1030

TO-15 Volatile Organic Compounds in Ambient Air

Analysis Method:	TO-15	Analysis Batch:	200-76161	Instrument ID:	CHG.i
Prep Method:	Summa Can	Prep Batch:	N/A	Lab File ID:	9040_022.D
Dilution:	7270			Initial Weight/Volume:	41 mL
Analysis Date:	08/17/2014 1215	Run Type:	DL	Final Weight/Volume:	200 mL
Prep Date:	08/17/2014 1215			Injection Volume:	200 mL

Analyte	Result (ppb v/v)	Qualifier	MDL	RL
Acetone	36000	U	9100	36000
Methylene Chloride	3600	U	910	3600
Chloroform	8900	~~D~~	180	1500
Carbon tetrachloride	190000	~~D~~	150	1500

Analyte	Result (ug/m3)	Qualifier	MDL	RL
Acetone	86000	U	22000	86000
Methylene Chloride	13000	U	3200	13000
Chloroform	43000	~~D~~	890	7100
Carbon tetrachloride	1200000	~~D~~	960	9100

esc 09/03/14

esc 09/03/14

Do Not Use

Client: Ertec

Job Number: 200-23499-1
Sdg Number: 200-23499

Client Sample ID: SVE-A

Lab Sample ID: 200-23499-5
Client Matrix: Air

Date Sampled: 08/05/2014 1447
Date Received: 08/06/2014 1030

TO-15 Volatile Organic Compounds in Ambient Air

Analysis Method:	TO-15	Analysis Batch:	200-76127	Instrument ID:	CHB.i
Prep Method:	Summa Can	Prep Batch:	N/A	Lab File ID:	9035_018.D
Dilution:	2450, 4250 ere 09/03/14			Initial Weight/Volume:	26 mL
Analysis Date:	08/16/2014 0103			Final Weight/Volume:	200 mL
Prep Date:	08/16/2014 0103			Injection Volume:	5 mL

Analyte	Result (ppb v/v)	Qualifier	MDL	RL
Acetone	12000	U	3100	12000
Methylene Chloride	1200	U	310	1200
Chloroform	5100		61	490
Carbon tetrachloride	~~140000~~ 95000	~~E~~	~~51~~ 89	~~400~~ 850

Analyte	Result (ug/m3)	Qualifier	MDL	RL
Acetone	29000	U	7300	29000
Methylene Chloride	4300	U	1100	4300
Chloroform	25000		300	2400
Carbon tetrachloride	~~670000~~ 600000	~~E~~	~~320~~ 500	~~3100~~ 5306

ere 09/03/14

Client: Ertec

Job Number: 200-23499-1
Sdg Number: 200-23499

Client Sample ID: SVE-A D L ere 09/03/14

Lab Sample ID: 200-23499-5
Client Matrix: Air

Date Sampled: 08/05/2014 1447
Date Received: 08/06/2014 1030

TO-15 Volatile Organic Compounds in Ambient Air

Analysis Method:	TO-15	Analysis Batch:	200-76161	Instrument ID:	CHG.i
Prep Method:	Summa Can	Prep Batch:	N/A	Lab File ID:	9040_021.D
Dilution:	4250			Initial Weight/Volume:	55 mL
Analysis Date:	08/17/2014 1124	Run Type:	DL	Final Weight/Volume:	200 mL
Prep Date:	08/17/2014 1124			Injection Volume:	200 mL

Analyte	Result (ppb v/v)	Qualifier	MDL	RL
Acetone	21000	U	5300	21000
Methylene Chloride	760	J ~~D~~	530	2100
Chloroform	5500	~~D~~	110	850
Carbon tetrachloride	95000	~~D~~	89	850

Analyte	Result (ug/m3)	Qualifier	MDL	RL
Acetone	50000	U	13000	50000
Methylene Chloride	2600	J ~~D~~	1800	7400
Chloroform	27000	~~D~~	520	4200
Carbon tetrachloride	600000	~~D~~	560	5300

Do Not Use ere 09/03/14

ere 09/03/14

Client: Ertec

Job Number: 200-23499-1
Sdg Number: 200-23499

Client Sample ID: **VMW-1-5**

Lab Sample ID: 200-23499-2
Client Matrix: Air

Date Sampled: 08/05/2014 1427
Date Received: 08/06/2014 1030

TO-15 Volatile Organic Compounds in Ambient Air

Analysis Method:	TO-15	Analysis Batch:	200-76127	Instrument ID:	CHB.i
Prep Method:	Summa Can	Prep Batch:	N/A	Lab File ID:	9035_015.D
Dilution:	5970			Initial Weight/Volume:	33 mL
Analysis Date:	08/15/2014 2227			Final Weight/Volume:	200 mL
Prep Date:	08/15/2014 2227			Injection Volume:	5 mL

Analyte	Result (ppb v/v)	Qualifier	MDL	RL
Acetone	30000	U	7500	30000
Methylene Chloride	3000	U	750	3000
Chloroform	5300		150	1200
Carbon tetrachloride	230000		130	1200

Analyte	Result (ug/m3)	Qualifier	MDL	RL
Acetone	71000	U	18000	71000
Methylene Chloride	10000	U	2600	10000
Chloroform	26000		730	5800
Carbon tetrachloride	1400000		790	7500

Client: Ertec

Job Number: 200-23499-1
Sdg Number: 200-23499

Client Sample ID: **VMW-2-5**

Lab Sample ID: 200-23499-3
Client Matrix: Air

Date Sampled: 08/05/2014 1435
Date Received: 08/06/2014 1030

TO-15 Volatile Organic Compounds in Ambient Air

Analysis Method:	TO-15	Analysis Batch:	200-76127	Instrument ID:	CHB.i
Prep Method:	Summa Can	Prep Batch:	N/A	Lab File ID:	9035_016.D
Dilution:	4220, 7350 rre 09/03/14			Initial Weight/Volume:	54 mL
Analysis Date:	08/15/2014 2319			Final Weight/Volume:	200 mL
Prep Date:	08/15/2014 2319			Injection Volume:	5 mL

Analyte	Result (ppb v/v)	Qualifier	MDL	RL
Acetone	21000	U	5300	21000
Methylene Chloride	2100	U	530	2100
Chloroform	8600		110	840
Carbon tetrachloride	~~180000~~ 170,000	~~E~~	~~80~~ 150	~~840~~ 1500

Analyte	Result (ug/m3)	Qualifier	MDL	RL
Acetone	50000	U	13000	50000
Methylene Chloride	7300	U	1800	7300
Chloroform	42000		520	4100
Carbon tetrachloride	~~1100000~~ 1000000	~~E~~	~~560~~ 970	~~5300~~ 9200

rre 09/03/14

Client: Ertec

Job Number: 200-23499-1
Sdg Number: 200-23499

Client Sample ID: VMW-2-5 DL esc 09/03/14

Lab Sample ID: 200-23499-3
Client Matrix: Air

Date Sampled: 08/05/2014 1435
Date Received: 08/06/2014 1030

TO-15 Volatile Organic Compounds in Ambient Air

Analysis Method:	TO-15	Analysis Batch:	200-76161	Instrument ID:	CHG.i
Prep Method:	Summa Can	Prep Batch:	N/A	Lab File ID:	9040_019.D
Dilution:	7350			Initial Weight/Volume:	31 mL
Analysis Date:	08/17/2014 0941	Run Type:	DL	Final Weight/Volume:	200 mL
Prep Date:	08/17/2014 0941			Injection Volume:	200 mL

Analyte	Result (ppb v/v)	Qualifier	MDL	RL
Acetone	37000	U	9200	37000
Methylene Chloride	3700	U	920	3700
Chloroform	9200	~~D~~	180	1500
Carbon tetrachloride	170000	~~D~~	150	1500

Analyte	Result (ug/m3)	Qualifier	MDL	RL
Acetone	87000	U	22000	87000
Methylene Chloride	13000	U	3200	13000
Chloroform	45000	~~D~~	900	7200
Carbon tetrachloride	1000000	~~D~~	970	9200

esc 09/03/14

Do Not Use esc 09/03/14

Client: Ertec

Job Number: 200-23499-1
Sdg Number: 200-23499

Client Sample ID: **VMW-3C-5**

Lab Sample ID: 200-23499-4
Client Matrix: Air

Date Sampled: 08/05/2014 1443
Date Received: 08/06/2014 1030

TO-15 Volatile Organic Compounds In Ambient Air

Analysis Method:	TO-15	Analysis Batch:	200-76127	Instrument ID:	CHB.i
Prep Method:	Summa Can	Prep Batch:	N/A	Lab File ID:	9035_017.D
Dilution:	2490, 4560 ~~2~~ ~~09/03/14~~			Initial Weight/Volume:	119 mL
Analysis Date:	08/16/2014 0011			Final Weight/Volume:	200 mL
Prep Date:	08/16/2014 0011			Injection Volume:	5 mL

Analyte	Result (ppb v/v)	Qualifier	MDL	RL
Acetone	12000	U	3100	12000
Methylene Chloride	1200	U	310	1200
Chloroform	5500		62	500
Carbon tetrachloride	~~110000~~ 94000	~~E~~	~~52~~ 96	~~500~~ 910

Analyte	Result (ug/m3)	Qualifier	MDL	RL
Acetone	30000	U	7400	30000
Methylene Chloride	4300	U	1100	4300
Chloroform	27000		300	2400
Carbon tetrachloride	~~720000~~ 590000	~~E~~	~~330~~ 600	~~3100~~ 5700

~~2~~ 09/03/14

Client: Ertec

Job Number: 200-23499-1
Sdg Number: 200-23499

Client Sample ID: VMW-3C-5 DL ere 09/03/14

Lab Sample ID: 200-23499-4
Client Matrix: Air

Date Sampled: 08/05/2014 1443
Date Received: 08/06/2014 1030

TO-15 Volatile Organic Compounds in Ambient Air

Analysis Method:	TO-15	Analysis Batch:	200-76161	Instrument ID:	CHG.i
Prep Method:	Summa Can	Prep Batch:	N/A	Lab File ID:	9040_020.D
Dilution:	4560			Initial Weight/Volume:	65 mL
Analysis Date:	08/17/2014 1033	Run Type:	DL	Final Weight/Volume:	200 mL
Prep Date:	08/17/2014 1033			Injection Volume:	200 mL

Analyte	Result (ppb v/v)	Qualifier	MDL	RL
Acetone	23000	U	5700	23000
Methylene Chloride	2300	U	570	2300
Chloroform	5400	~~U~~	110	910
Carbon tetrachloride	94000	~~U~~	96	910

Analyte	Result (ug/m3)	Qualifier	MDL	RL
Acetone	54000	U	14000	54000
Methylene Chloride	7900	U	2000	7900
Chloroform	26000	~~U~~	560	4500
Carbon tetrachloride	590000	~~U~~	600	5700

ere 09/03/14

Client: Ertec

Job Number: 200-23499-1
Sdg Number: 200-23499

Client Sample ID: **TB-080514**

Lab Sample ID: 200-23499-1
Client Matrix: Air

Date Sampled: 08/05/2014 0000
Date Received: 08/06/2014 1030

TO-15 Volatile Organic Compounds in Ambient Air

Analysis Method:	TO-15	Analysis Batch:	200-76127	Instrument ID:	CHB.i
Prep Method:	Summa Can	Prep Batch:	N/A	Lab File ID:	9035_014.D
Dilution:	1.0			Initial Weight/Volume:	200 mL
Analysis Date:	08/15/2014 2135			Final Weight/Volume:	200 mL
Prep Date:	08/15/2014 2135			Injection Volume:	5 mL

Analyte	Result (ppb v/v)	Qualifier	MDL	RL
Acetone	5.0	U	1.3	5.0
Methylene Chloride	0.50	U	0.13	0.50
Chloroform	0.20	U	0.025	0.20
Carbon tetrachloride	0.20	U	0.021	0.20

Analyte	Result (ug/m3)	Qualifier	MDL	RL
Acetone	12	U	3.0	12
Methylene Chloride	1.7	U	0.43	1.7
Chloroform	0.98	U	0.12	0.98
Carbon tetrachloride	1.3	U	0.13	1.3

ATTACHMENT B

EPA REGION II QUALIFIERS AND THEIR DEFINITIONS

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

N - The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."

NJ - The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.

UJ - The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

R - The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

Eden Environmental, LLC

September 26, 2014

Ms. Wanda Morales
ERTEC
Amur St. A - #5
Reparto Landrau
Rio Piedras, PR 00921

RE: Data Validation Report for the SVE TO-15 Air Monitoring of the Pfizer Arecibo Site

Dear Wanda,

Enclosed is the validation report for the air samples collected on September 4, 2014, from the Pfizer Arecibo Site. The following samples were submitted to TestAmerica in Burlington, Vermont and were assigned to Sample Delivery Group (SDG) 200-24027:

STACK-6	SVE-A	INLET-6
VMW-1-6	VMW-2-6	VMW-3C-6
TB-090414		

The data package was received on September 23, 2014. The laboratory performed well, but some qualifications of results were necessary.

All samples were analyzed for acetone, methylene chloride, chloroform, and carbon tetrachloride in conformance with the specifications of the USEPA Compendium Method TO-15. The validation effort was restricted to the reported results and supporting data for these compounds.

Data validation was performed in conformance with the specifications of the EPA Region II Standard Operating Procedure (Volatile Organic Analysis of Ambient Air in Canisters by Method TO-15," SOP HW-31 Revision 4, October, 2006). When necessary, professional judgment was applied and appropriately noted in the applicable section of the attached report. The validation effort for these data has the label Stage 4 Validation Manual (S4VM).

Anomalies detected during the validation effort (if any) are included in the appropriate section of the attached report. The Laboratory Analytical Data Forms with all qualifiers resulting from the validation effort (if any were necessary) are included in Attachment A. The EPA Region II qualifiers and their definitions are included in Attachment B.

If you have any questions regarding this report, please give me a call at 225-355-0163 or contact me by e-mail at engrid@eden-env.com

Best Regards,

Engrid Carpenter

Engrid S. Carpenter
President

Eden Environmental, LLC

ANALYTICAL DATA VALIDATION

ERTEC JOB DESCRIPTION – PFIZER ARECIBO – SVE

ERTEC JOB NUMBER –14-5288

ORGANIC ANALYSIS DATA

Prepared by: TestAmerica Laboratory, Burlington Vermont
Sample Delivery Group: 200-24027
Selected Volatile Organic Compounds in Air Samples

VALIDATION REPORT

Prepared by: Eden Environmental, LLC
Eden Project Number 13103

Date: September 26, 2014

13103/ESC/CEW
200-24027-TO-15

Eden Environmental, LLC

INTRODUCTION

The following samples were collected on September 4, 2014, submitted to TestAmerica in Burlington, Vermont, and assigned to Sample Delivery Group (SDG) 200-24027:

STACK-6	SVE-A	INLET-6
VMW-1-6	VMW-2-6	VMW-3C-6
TB-090414		

Data validation was performed in conformance with the specifications of the EPA Region II Standard Operating Procedure (Volatile Organic Analysis of Ambient Air in Canisters by Method TO-15," SOP HW-31 Revision 4, October, 2006). When necessary, professional judgment was applied and appropriately noted in the applicable section of the attached report. The validation effort for these data has the label Stage 4 Validation Manual (S4VM).

Anomalies detected during the validation effort (if any) are included in the appropriate section of the attached report. The Laboratory Analytical Data Forms with all qualifiers resulting from the validation effort (if any were necessary) are included in Attachment A. The EPA Region II qualifiers and their definitions are included in Attachment B.

I. Holding Times, Preservation, and Sample Integrity

All TO-15 analyses were performed within holding time. A copy of the Laboratory Login Sample Receipt Checklist noted that all samples were in good condition with container custody seals intact. Copies of the chain of custody records were also present in the data package and included all of the samples in this data set. Therefore, all requirements for holding times and sample integrity were met. No physical preservation requirements are specified for Summa® canisters.

II. GC/MS Instrument Performance Checks

Results were reported for three bromofluorobenzene (BFB) instrument performance checks. Requirements for all instrument performance checks were met.

III. Calibration

These samples were analyzed on a single gas chromatography/mass spectrometry (GC/MS) system, which was identified as "CHC." No evidence was presented in the data package to indicate that manual integrations were performed on any project-specified target compounds or on any of the internal standards in any of the calibration standards.

A. Initial Calibration (IC) and Initial Calibration Verification (ICV)

IC was established on August 15, 2014. An ICV was analyzed immediately following the IC. EPA Region II-specified acceptance criteria were met for all of these standards.

B. Continuing Verification (CV)

Documentation of two CV standards was present in the data package. All reported sample analyses were associated with one or the other of these standards. With the exceptions of acetone (37% and 41%; ≤30% EPA Region II-specified acceptance criteria), all criteria were met for both of these standards.

The high percent difference (%D) values for acetone suggest the potential for reporting false positives and/or high bias to positively reported results. Acetone was not detected in any of the samples included in this data set. Based on professional judgment, no action by the validator was necessary.

IV. Blanks

A laboratory blank was analyzed in each analytical sequence containing the site samples. No project-specified target analytes were detected in either laboratory blank.

A trip blank (TB-091414) was submitted with the samples included in this data set. No project-specified target analytes were detected in TB-091414.

V. Surrogate Recoveries

The use of a surrogate compound is not addressed in Method TO-15. A surrogate compound was not employed in the analyses of these samples.

VI. Laboratory Check Standard (Audit Accuracy Standard)

A 10 ppbv laboratory check standard (identified as LCS) was analyzed in each analytical sequence containing the reported samples. Each LCS was spiked with all of the project-specified target analytes. Recoveries of the target analytes in both LCSs were within the quality control limits specified by the validation guidance document.

VII. Laboratory Replicate Analyses

STACK-6 was analyzed as a laboratory replicate. Reproducibility between the positively paired results for chloroform and carbon tetrachloride was within the laboratory-specified acceptance limits. Acetone and methylene chloride were not detected in either analysis of this sample; therefore, no further quantitative evaluation of precision could be made from these data.

VIII. Field Duplicates

Collection of true field duplicates is not feasible for air samples; therefore, a better description of these quality control samples would be co-located samples. The validation guidance document does not provide an acceptance criterion for RPDs between reported concentrations in "field duplicate" samples. For the purpose of this validation effort, a maximum acceptance limit of 100 RPD was used to define acceptable agreement between reported results in the co-located samples. Results with RPD values greater than 100 RPD should be used with caution as the concentration and source of these compounds in the reported samples is uncertain.

SVE-A was collected as a co-located sample of STACK-6. Acceptable reproducibility between concentrations reported for chloroform and carbon tetrachloride was observed. Acetone and methylene chloride were not detected in either of these samples; therefore, no further quantitative evaluation of precision could be made from these data.

IX. Internal Standard Performance

The validator confirmed that the areas and retention times of all three internal standards were within the method-specified acceptance limits for the reported site and quality control analyses.

X. Target Compound Identification

When detected, the target analyte was correctly identified with acceptable supporting mass spectral data present in the data package.

XI. Compound Quantitation and Reporting Limits (RLs)

A RL of ≤0.50 ppbv is a required performance criterion for this project. The low concentration standard in the IC was 0.50 ppbv for methylene chloride, 0.20 ppbv for chloroform, and 0.04 ppbv for carbon tetrachloride. The unadjusted RLs are equivalent to or higher than the low concentration standard used to establish the IC and are supported by the reported data.

The low concentration IC standard for acetone was 5.0 ppbv, which is also the RL used for this analyte and supported by the reported data. The RL for acetone does not meet the performance criterion for this project, but does reflect the best efforts of the laboratory.

Concentrations of carbon tetrachloride in SVE-A, INLET-6, VMW-1-6, VMW-2-6, and VMW-3C-6 exceeded the laboratory-established calibration range of the instrument. Results for this compound in the less diluted analyses of these samples were qualified as estimated (J). A more diluted analysis of each of these samples was performed and was within the calibration range of the instrument. Only the results for carbon tetrachloride were taken from SVE-ADL, INLET-6DL, VMW-1-6DL, VMW-2-6DL, and VMW-3C-6DL. All other results were taken from the less diluted analyses of these samples. The laboratory-applied "E" and "D" qualifiers used to indicate results that exceeded the laboratory-established calibration range of the instrument and results from a more diluted analysis, respectively, were removed by the validator. The Laboratory Analytical Data Forms for both analyses of SVE-A, INLET-6, VMW-1-6, VMW-2-6, and VMW-3C-6 are included in Attachment B. However, the Laboratory Analytical Data Forms for the less diluted analyses of these samples were hybridized to include the results for carbon tetrachloride recommended for use by the validator. The Laboratory Data Forms from the more diluted analyses of these samples have been marked "Do Not Use" for clarity.

XII. Tentatively Identified Compounds (TICs)

Library searches were not requested for these samples.

XIII. Documentation

With regard to the chain of custody records,

- The laboratory sample received by signature is illegible on both chain of custody records.

- The sections on the chain of custody records indicated "for laboratory use only" were not completed. For all future sampling efforts, the laboratory should be requested to complete all appropriate sections of each chain of custody record to ensure that accurate and complete documentation is available for future reference.

All of the laboratory sample receipt information was provided on the laboratory-generated Login Sample Receipt Checklist, which confirmed that all samples were properly documented and shipped in custody sealed containers.

A copy of the FedEx airbill was included in the data package to document the transfer of the samples from the field to the laboratory.

The Laboratory Analytical Data Forms also include a column identified as MDL. MDLs of 1.3 ppbv for acetone, 0.13 ppbv for methylene chloride, 0.025 ppbv for chloroform, and 0.021 ppbv for carbon tetrachloride are reported, but these MDLs are not supported by the data as received. Therefore, it is recommended that the RLs rather than the MDLs be used as the lowest support limit of detection.

XIV. Overall Assessment

Findings of the validation effort resulted in the following qualifications of samples results:

- Results for carbon tetrachloride in the less diluted analyses of SVE-A, INLET-6, VMW-1-6, VMW-2-6, and VMW-3C-6 were qualified as estimated (J) because the reported concentrations exceeded the laboratory-established calibration range of the instrument. Results for carbon tetrachloride only were taken from the more diluted analyses of these samples. The Laboratory Analytical Data Forms for both analyses of SVE-A, INLET-6, VMW-1-6, VMW-2-6, and VMW-3C-6 are included in Attachment B. However, the Laboratory Analytical Data Form for the less diluted analyses of these samples were hybridized to include the results for carbon tetrachloride recommended for use by the validator. The Laboratory Analytical Data Forms for the more diluted analyses of these samples were marked "Do Not Use" for clarity.

All laboratory applied "E" and "D" qualifiers were removed by the validator.

This validation effort is based on the data as provided by the laboratory. Software manipulation cannot be routinely detected during validation and is outside the scope of this review.

This validation report should be added to the data package for all future distributions of TO-15 data reported in SDG 200-24027.

Eden Environmental, LLC

ATTACHMENT A

LABORATORY ANALYTICAL DATA FORMS

Client: Ertec

Job Number: 200-24027-1
Sdg Number: 200-24027

Client Sample ID: STACK-6

Lab Sample ID: 200-24027-5
Client Matrix: Air

Date Sampled: 09/04/2014 1203
Date Received: 09/05/2014 1020

TO-15 Volatile Organic Compounds in Ambient Air

Analysis Method:	TO-15	Analysis Batch:	200-77159	Instrument ID:	CHC.i
Prep Method:	Summa Can	Prep Batch:	N/A	Lab File ID:	9417_017.D
Dilution:	363			Initial Weight/Volume:	39 mL
Analysis Date:	09/13/2014 0003			Final Weight/Volume:	200 mL
Prep Date:	09/13/2014 0003			Injection Volume:	200 mL

Analyte	Result (ppb v/v)	Qualifier	MDL	RL
Acetone	1800	U	450	1800
Methylene Chloride	180	U	45	180
Chloroform	460		9.1	73
Carbon tetrachloride	9300		7.6	73

Analyte	Result (ug/m3)	Qualifier	MDL	RL
Acetone	4300	U	1100	4300
Methylene Chloride	630	U	160	630
Chloroform	2300		44	350
Carbon tetrachloride	59000		48	460

Client: Ertec

Job Number: 200-24027-1
Sdg Number: 200-24027

Client Sample ID: SVE-A

Lab Sample ID: 200-24027-6
Client Matrix: Air

Date Sampled: 09/04/2014 1208
Date Received: 09/05/2014 1020

TO-15 Volatile Organic Compounds In Ambient Air

Analysis Method:	TO-15	Analysis Batch:	200-77159	Instrument ID:	CHC.i
Prep Method:	Summa Can	Prep Batch:	N/A	Lab File ID:	9417_020.D
Dilution:	162			Initial Weight/Volume:	55 mL
Analysis Date:	09/13/2014 0243			Final Weight/Volume:	200 mL
Prep Date:	09/13/2014 0243			Injection Volume:	200 mL

Analyte	Result (ppb v/v)	Qualifier	MDL	RL
Acetone	810	U	200	810
Methylene Chloride	81	U	20	81
Chloroform	460		4.1	32
Carbon tetrachloride	~~9500~~ 9600	~~E~~	~~3.4~~ 9.3	~~32~~ 89

Analyte	Result (ug/m3)	Qualifier	MDL	RL
Acetone	1900	U	480	1900
Methylene Chloride	280	U	70	280
Chloroform	2200		20	160
Carbon tetrachloride	~~60000~~ 61000	~~E~~	~~2T~~ 59	~~200~~ 566

ere 09/26/14

Client: Ertec

Job Number: 200-24027-1
Sdg Number: 200-24027

Client Sample ID: SVE-A DL ere 09/26/14

Lab Sample ID: 200-24027-6
Client Matrix: Air

Date Sampled: 09/04/2014 1208
Date Received: 09/05/2014 1020

TO-15 Volatile Organic Compounds in Ambient Air

Analysis Method:	TO-15	Analysis Batch:	200-77217	Instrument ID:	CHC.i
Prep Method:	Summa Can	Prep Batch:	N/A	Lab File ID:	9441_013.D
Dilution:	445			Initial Weight/Volume:	20 mL
Analysis Date:	09/15/2014 1911	Run Type:	DL	Final Weight/Volume:	200 mL
Prep Date:	09/15/2014 1911			Injection Volume:	200 mL

Analyte	Result (ppb v/v)	Qualifier	MDL	RL
Acetone	2200	U	560	2200
Methylene Chloride	220	U	56	220
Chloroform	480	~~D~~	11	89
Carbon tetrachloride	9600	~~D~~	9.3	89

Analyte	Result (ug/m3)	Qualifier	MDL	RL
Acetone	5300	U	1300	5300
Methylene Chloride	770	U	190	770
Chloroform	2400	~~D~~	54	430
Carbon tetrachloride	61000	~~D~~	59	560

Do Not Use ere 09/26/14

ere 09/26/14

Client: Ertec

Job Number: 200-24027-1
Sdg Number: 200-24027

Client Sample ID: INLET-6 DL ere 09/26/14

Lab Sample ID: 200-24027-4
Client Matrix: Air

Date Sampled: 09/04/2014 1153
Date Received: 09/05/2014 1020

TO-15 Volatile Organic Compounds in Ambient Air

Analysis Method:	TO-15	Analysis Batch:	200-77217	Instrument ID:	CHC.i
Prep Method:	Summa Can	Prep Batch:	N/A	Lab File ID:	9441_012.D
Dilution:	2570			Initial Weight/Volume:	20 mL
Analysis Date:	09/15/2014 1818	Run Type:	DL	Final Weight/Volume:	200 mL
Prep Date:	09/15/2014 1818			Injection Volume:	200 mL

Analyte	Result (ppb v/v)	Qualifier	MDL	RL
Acetone	13000	U	3200	13000
Methylene Chloride	1300	U	320	1300
Chloroform	3500	~~D~~	64	510
Carbon tetrachloride	63000	~~D~~	54	510

Analyte	Result (ug/m3)	Qualifier	MDL	RL
Acetone	31000	U	7600	31000
Methylene Chloride	4500	U	1100	4500
Chloroform	17000	~~D~~	310	2500
Carbon tetrachloride	400000	~~D~~	340	3200

Do Not Use ere 09/26/14

Client: Ertec

Job Number: 200-24027-1
Sdg Number: 200-24027

Client Sample ID: **VMW-1-6**

Lab Sample ID: 200-24027-1
Client Matrix: Air

Date Sampled: 09/04/2014 1116
Date Received: 09/05/2014 1020

TO-15 Volatile Organic Compounds in Ambient Air

Analysis Method:	TO-15	Analysis Batch:	200-77159	Instrument ID:	CHC.i
Prep Method:	Summa Can	Prep Batch:	N/A	Lab File ID:	9417_013.D
Dilution:	1740			Initial Weight/Volume:	30 mL
Analysis Date:	09/12/2014 2031			Final Weight/Volume:	200 mL
Prep Date:	09/12/2014 2031			Injection Volume:	200 mL

Analyte	Result (ppb v/v)	Qualifier	MDL	RL
Acetone	8700	U	2200	8700
Methylene Chloride	870	U	220	870
Chloroform	5600		44	350
Carbon tetrachloride	~~88000~~ 86000	~~E~~	~~37~~ 74	~~350~~ 700

Analyte	Result (ug/m3)	Qualifier	MDL	RL
Acetone	21000	U	5200	21000
Methylene Chloride	3000	U	760	3000
Chloroform	27000		210	1700
Carbon tetrachloride	~~560000~~ 540000	~~E~~	~~230~~ 470	~~2200~~ 4400

eee 09/24/14

Client: Ertec

Job Number: 200-24027-1
Sdg Number: 200-24027

Client Sample ID: VMW-1-6 DL ere 09/26/14

Lab Sample ID: 200-24027-1
Client Matrix: Air

Date Sampled: 09/04/2014 1116
Date Received: 09/05/2014 1020

TO-15 Volatile Organic Compounds in Ambient Air

Analysis Method:	TO-15	Analysis Batch:	200-77217	Instrument ID:	CHC.i
Prep Method:	Summa Can	Prep Batch:	N/A	Lab File ID:	9441_009.D
Dilution:	3520			Initial Weight/Volume:	30 mL
Analysis Date:	09/15/2014 1539	Run Type:	DL	Final Weight/Volume:	200 mL
Prep Date:	09/15/2014 1539			Injection Volume:	200 mL

Analyte	Result (ppb v/v)	Qualifier	MDL	RL
Acetone	18000	U	4400	18000
Methylene Chloride	1800	U	440	1800
Chloroform	5700	~~U~~	88	700
Carbon tetrachloride	86000	~~U~~	74	700

Analyte	Result (ug/m3)	Qualifier	MDL	RL
Acetone	42000	U	10000	42000
Methylene Chloride	6100	U	1500	6100
Chloroform	28000	~~U~~ 09/26/14	430	3400
Carbon tetrachloride	540000	~~U~~ 09	470	4400

Do Not Use ere 09/26/14

Client: Ertec

Job Number: 200-24027-1
Sdg Number: 200-24027

Client Sample ID: VMW-2-6

Lab Sample ID: 200-24027-2
Client Matrix: Air

Date Sampled: 09/04/2014 1137
Date Received: 09/05/2014 1020

TO-15 Volatile Organic Compounds in Ambient Air

Analysis Method:	TO-15	Analysis Batch:	200-77159	Instrument ID:	CHC.i
Prep Method:	Summa Can	Prep Batch:	N/A	Lab File ID:	9417_014.D
Dilution:	1330			Initial Weight/Volume:	34 mL
Analysis Date:	09/12/2014 2123			Final Weight/Volume:	200 mL
Prep Date:	09/12/2014 2123			Injection Volume:	200 mL

Analyte	Result (ppb v/v)	Qualifier	MDL	RL
Acetone	6700	U	1700	6700
Methylene Chloride	670	U	170	670
Chloroform	4900		33	270
Carbon tetrachloride	~~75000~~ 72000	~~E~~	~~20~~ 62	~~270~~ 590

Analyte	Result (ug/m3)	Qualifier	MDL	RL
Acetone	16000	U	4000	16000
Methylene Chloride	2300	U	580	2300
Chloroform	24000		160	1300
Carbon tetrachloride	~~470000~~ 450000	~~E~~	~~160~~ 390	~~1700~~ 3700

Client: Ertec

Job Number: 200-24027-1
Sdg Number: 200-24027

Client Sample ID: VMW-2-6 DL ere 09/26/14

Lab Sample ID: 200-24027-2
Client Matrix: Air

Date Sampled: 09/04/2014 1137
Date Received: 09/05/2014 1020

TO-15 Volatile Organic Compounds in Ambient Air

Analysis Method:	TO-15	Analysis Batch:	200-77217	Instrument ID:	CHC.i
Prep Method:	Summa Can	Prep Batch:	N/A	Lab File ID:	9441_010.D
Dilution:	2960			Initial Weight/Volume:	31 mL
Analysis Date:	09/15/2014 1632	Run Type:	DL	Final Weight/Volume:	200 mL
Prep Date:	09/15/2014 1632			Injection Volume:	200 mL

Analyte	Result (ppb v/v)	Qualifier	MDL	RL
Acetone	15000	U	3700	15000
Methylene Chloride	1500	U	370	1500
Chloroform	4900	~~D~~	74	590
Carbon tetrachloride	72000	~~D~~	62	590

Analyte	Result (ug/m3)	Qualifier	MDL	RL
Acetone	35000	U	8800	35000
Methylene Chloride	5100	U	1300	5100
Chloroform	24000	~~D~~	360	2900
Carbon tetrachloride	450000	~~D~~	390	3700

ere 09/26/14

Do Not Use ere 09/26/14

Client: Ertec

Job Number: 200-24027-1
Sdg Number: 200-24027

Client Sample ID: VMW-3C-6

Lab Sample ID: 200-24027-3
Client Matrix: Air

Date Sampled: 09/04/2014 1145
Date Received: 09/05/2014 1020

TO-15 Volatile Organic Compounds in Ambient Air

Analysis Method:	TO-15	Analysis Batch:	200-77159	Instrument ID:	CHC.i
Prep Method:	Summa Can	Prep Batch:	N/A	Lab File ID:	9417_015.D
Dilution:	909			Initial Weight/Volume:	56 mL
Analysis Date:	09/12/2014 2217			Final Weight/Volume:	200 mL
Prep Date:	09/12/2014 2217			Injection Volume:	200 mL

Analyte	Result (ppb v/v)	Qualifier	MDL	RL
Acetone	4500	U	1100	4500
Methylene Chloride	450	U	110	450
Chloroform	2700		23	180
Carbon tetrachloride	~~54000~~ 62000	E	~~19~~ 53	~~180~~ 510

Analyte	Result (ug/m3)	Qualifier	MDL	RL
Acetone	11000	U	2700	11000
Methylene Chloride	1600	U	390	1600
Chloroform	13000		110	890
Carbon tetrachloride	~~340000~~ 330000	E	~~120~~ 340	~~1100~~ 3200

09/26/14

Client: Ertec

Job Number: 200-24027-1
Sdg Number: 200-24027

Client Sample ID: VMW-3C-6 DL ere 09/26/14

Lab Sample ID: 200-24027-3
Client Matrix: Air

Date Sampled: 09/04/2014 1145
Date Received: 09/05/2014 1020

TO-15 Volatile Organic Compounds in Ambient Air

Analysis Method:	TO-15	Analysis Batch:	200-77217	Instrument ID:	CHC.i
Prep Method:	Summa Can	Prep Batch:	N/A	Lab File ID:	9441_011.D
Dilution:	2540			Initial Weight/Volume:	20 mL
Analysis Date:	09/15/2014 1725	Run Type:	DL	Final Weight/Volume:	200 mL
Prep Date:	09/15/2014 1725			Injection Volume:	200 mL

Analyte	Result (ppb v/v)	Qualifier	MDL	RL
Acetone	13000	U	3200	13000
Methylene Chloride	1300	U	320	1300
Chloroform	2700	~~U~~	64	510
Carbon tetrachloride	52000	~~U~~	53	510

Analyte	Result (ug/m3)	Qualifier	MDL	RL
Acetone	30000	U	7500	30000
Methylene Chloride	4400	U	1100	4400
Chloroform	13000	~~U~~	310	2500
Carbon tetrachloride	330000	~~U~~	340	3200

ere 09/26/14

Do Not Use ere 9/26/14

Client: Ertec

Job Number: 200-24027-1
Sdg Number: 200-24027

Client Sample ID: **INLET-6**

Lab Sample ID: 200-24027-4
Client Matrix: Air

Date Sampled: 09/04/2014 1153
Date Received: 09/05/2014 1020

TO-15 Volatile Organic Compounds in Ambient Air

Analysis Method:	TO-15	Analysis Batch:	200-77159	Instrument ID:	CHC.i
Prep Method:	Summa Can	Prep Batch:	N/A	Lab File ID:	9417_016.D
Dilution:	1140			Initial Weight/Volume:	45 mL
Analysis Date:	09/12/2014 2310			Final Weight/Volume:	200 mL
Prep Date:	09/12/2014 2310			Injection Volume:	200 mL

Analyte	Result (ppb v/v)	Qualifier	MDL	RL
Acetone	5700	U	1400	5700
Methylene Chloride	570	U	140	570
Chloroform	3500		29	230
Carbon tetrachloride	~~88000~~ 63000	~~E~~	~~24~~ 54	~~230~~ 510

Analyte	Result (ug/m3)	Qualifier	MDL	RL
Acetone	14000	U	3400	14000
Methylene Chloride	2000	U	490	2000
Chloroform	17000		140	1100
Carbon tetrachloride	~~440000~~ 400000	~~E~~	~~150~~ 340	~~1400~~ 3200

ere 09/26/14

Client: Ertec

Job Number: 200-24027-1
Sdg Number: 200-24027

Client Sample ID: TB-090414

Lab Sample ID: 200-24027-7
Client Matrix: Air

Date Sampled: 09/04/2014 0000
Date Received: 09/05/2014 1020

TO-15 Volatile Organic Compounds in Ambient Air

Analysis Method:	TO-15	Analysis Batch:	200-77159	Instrument ID:	CHC.i
Prep Method:	Summa Can	Prep Batch:	N/A	Lab File ID:	9417_021.D
Dilution:	1.0			Initial Weight/Volume:	200 mL
Analysis Date:	09/13/2014 0336			Final Weight/Volume:	200 mL
Prep Date:	09/13/2014 0336			Injection Volume:	200 mL

Analyte	Result (ppb v/v)	Qualifier	MDL	RL
Acetone	5.0	U	1.3	5.0
Methylene Chloride	0.50	U	0.13	0.50
Chloroform	0.20	U	0.025	0.20
Carbon tetrachloride	0.20	U	0.021	0.20

Analyte	Result (ug/m3)	Qualifier	MDL	RL
Acetone	12	U	3.0	12
Methylene Chloride	1.7	U	0.43	1.7
Chloroform	0.98	U	0.12	0.98
Carbon tetrachloride	1.3	U	0.13	1.3

ATTACHMENT B

EPA REGION II QUALIFIERS AND THEIR DEFINITIONS

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

N - The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."

NJ - The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.

UJ - The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

R - The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

Eden Environmental, LLC

November 3, 2014

Ms. Wanda Morales
ERTEC
Amur St. A - #5
Reparto Landrau
Rio Piedras, PR 00921

RE: Data Validation Report for the SVE TO-15 Air Monitoring of the Pfizer Arecibo Site

Dear Wanda,

Enclosed is the validation report for the air samples collected on October 9, 2014, from the Pfizer Arecibo Site. The following samples were submitted to TestAmerica in Burlington, Vermont and were assigned to Sample Delivery Group (SDG) 200-24713:

STACK-7	INLET-7	VMW-1-7
VMW-2-7	VMW-3C-7	

The data package was received on October 29, 2014. The laboratory performed well, and no qualifiers were added by the validator.

All samples were analyzed for acetone, methylene chloride, chloroform, and carbon tetrachloride in conformance with the specifications of the USEPA Compendium Method TO-15. The validation *effort was restricted to the reported results and supporting data for these compounds.*

Data validation was performed in conformance with the specifications of the EPA Region II Standard Operating Procedure (Volatile Organic Analysis of Ambient Air in Canisters by Method TO-15," SOP HW-31 Revision 4, October, 2006). When necessary, professional judgment was applied and appropriately noted in the applicable section of the attached report. The validation effort for these data has the label Stage 4 Validation Manual (S4VM).

Anomalies detected during the validation effort (if any) are included in the appropriate section of the attached report. The Laboratory Analytical Data Forms with all qualifiers resulting from the validation effort (if any were necessary) are included in Attachment A. The EPA Region II qualifiers and their definitions are included in Attachment B.

If you have any questions regarding this report, please give me a call at 225-355-0163 or contact me by e-mail at engrid@eden-env.com

Kindest Regards,

Engrid Carpenter

Engrid S. Carpenter
President

Eden Environmental, LLC

ANALYTICAL DATA VALIDATION

ERTEC JOB DESCRIPTION – PFIZER ARECIBO – SVE

ERTEC JOB NUMBER –14-5288

ORGANIC ANALYSIS DATA

Prepared by: TestAmerica Laboratory, Burlington Vermont
Sample Delivery Group: 200-24713
Selected Volatile Organic Compounds in Air Samples

VALIDATION REPORT

Prepared by: Eden Environmental, LLC
Eden Project Number 13103

Date: November 3, 2014

13103/ESC/CEW
200-24713-TO-15

Eden Environmental, LLC

INTRODUCTION

The following samples were collected on October 9, 2014, submitted to TestAmerica in Burlington, Vermont, and assigned to Sample Delivery Group (SDG) 200-24713:

STACK-7	INLET-7	VMW-1-7
VMW-2-7	VMW-3C-7	

Data validation was performed in conformance with the specifications of the EPA Region II Standard Operating Procedure (Volatile Organic Analysis of Ambient Air in Canisters by Method TO-15," SOP HW-31 Revision 4, October, 2006). When necessary, professional judgment was applied and appropriately noted in the applicable section of the attached report. The validation effort for these data has the label Stage 4 Validation Manual (S4VM).

Anomalies detected during the validation effort (if any) are included in the appropriate section of the attached report. The Laboratory Analytical Data Forms with all qualifiers resulting from the validation effort (if any were necessary) are included in Attachment A. The EPA Region II qualifiers and their definitions are included in Attachment B.

I. Holding Times, Preservation, and Sample Integrity

All TO-15 analyses were performed within holding time. A copy of the Laboratory Login Sample Receipt Checklist noted that all samples were in good condition with container custody seals intact. A copy of the chain of custody record was also present in the data package and included all of the samples in this data set. Therefore, all requirements for holding times and sample integrity were met. No physical preservation requirements are specified for Summa® canisters.

II. GC/MS Instrument Performance Checks

Results were reported for two bromofluorobenzene (BFB) instrument performance checks. Requirements for both instrument performance checks were met.

III. Calibration

These samples were analyzed on a single gas chromatography/mass spectrometry (GC/MS) system, which was identified as "CHB." No evidence was presented in the data package to indicate that manual integrations were performed on any project-specified target compounds or on any of the internal standards in any of the calibration standards.

A. Initial Calibration (IC) and Initial Calibration Verification (ICV)

IC was established on September 21-22, 2014. An ICV was analyzed immediately following the IC. EPA Region II-specified acceptance criteria were met for all of these standards.

B. Continuing Verification (CV)

Documentation of a single CV standard was present in the data package. All reported sample analyses were associated with this standard. All criteria were met for this standard.

IV. Blanks

A laboratory blank was analyzed in the analytical sequence containing the site samples. No project-specified target analytes were detected in the laboratory blank. No field-submitted blank was included in this data set.

V. Surrogate Recoveries

The use of a surrogate compound is not addressed in Method TO-15. A surrogate compound was not employed in the analyses of these samples.

VI. Laboratory Check Standard (Audit Accuracy Standard)

A 10 ppbv laboratory check standard (identified as LCS) was analyzed in the analytical sequence containing the reported samples. The LCS was spiked with all of the project-specified target analytes. Recoveries of the target analytes in the LCS was within the quality control limits specified by the validation guidance document.

VII. Laboratory Replicate Analyses

STACK-7 was analyzed as a laboratory replicate. Reproducibility between the positively paired results for chloroform and carbon tetrachloride was within the laboratory-specified acceptance limits. Acetone and methylene chloride were not detected in either analysis of this sample; therefore, no further quantitative evaluation of precision could be made from these data.

VIII. Field Duplicates

Collection of true field duplicates is not feasible for air samples; therefore, a better description of these quality control samples would be co-located samples. The validation guidance document does not provide an acceptance criterion for RPDs between reported concentrations in "field duplicate" samples. For the purpose of this validation effort, a maximum acceptance limit of 100 RPD was used to define acceptable agreement between reported results in the co-located samples. Results with RPD values greater than 100 RPD should be used with caution as the concentration and source of these compounds in the reported samples is uncertain. No co-located sample was included in this data set.

IX. Internal Standard Performance

The validator confirmed that the areas and retention times of all three internal standards were within the method-specified acceptance limits for the reported site and quality control analyses.

X. Target Compound Identification

When detected, the target analyte was correctly identified with acceptable supporting mass spectral data present in the data package.

XI. Compound Quantitation and Reporting Limits (RLs)

A RL of ≤0.50 ppbv is a required performance criterion for this project. The low concentration standard in the IC was 0.50 ppbv for methylene chloride, 0.20 ppbv for chloroform, and 0.04 ppbv for carbon tetrachloride. The unadjusted RLs are equivalent to or higher than the low concentration standard used to establish the IC and are supported by the reported data.

The low concentration IC standard for acetone was 5.0 ppbv, which is also the RL used for this analyte and supported by the reported data. The RL for acetone does not meet the performance criterion for this project, but does reflect the best efforts of the laboratory.

XII. Tentatively Identified Compounds (TICs)

Library searches were not requested for these samples.

XIII. Documentation

With regard to the chain of custody records,

- The laboratory sample received by signature is illegible.
- The samples were shipped on October 9, 2014, but were not received by the laboratory until October 11, 2014. No information regarding the physical custody of these samples during the delayed arrival at the laboratory was provided.

All of the laboratory sample receipt information was provided on the laboratory-generated Login Sample Receipt Checklist, which confirmed that all samples were properly documented and shipped in custody sealed containers.

A copy of the FedEx airbill was included in the data package to document the transfer of the samples from the field to the laboratory.

The Laboratory Analytical Data Forms also include a column identified as MDL. Unadjusted MDLs for the target compounds are not supported by the data as received. Therefore, it is recommended that the RLs rather than the MDLs be used as the lowest supported limit of detection.

XIV. Overall Assessment

Findings of the validation effort did not result in the qualification of any sample results; the validator did not add any qualifiers to the laboratory reported results.

This validation effort is based on the data as provided by the laboratory. Software manipulation cannot be routinely detected during validation and is outside the scope of this review.

This validation report should be added to the data package for all future distributions of TO-15 data reported in SDG 200-24713.

Eden Environmental, LLC

ATTACHMENT A

LABORATORY ANALYTICAL DATA FORMS

Client: Ertec

Job Number: 200-24713-1
Sdg Number: 200-24713

Client Sample ID: STACK-7

Lab Sample ID: 200-24713-5
Client Matrix: Air

Date Sampled: 10/09/2014 1326
Date Received: 10/11/2014 1045

TO-15 Volatile Organic Compounds in Ambient Air

Analysis Method:	TO-15	Analysis Batch:	200-78645	Instrument ID:	CHB.I
Prep Method:	Summa Can	Prep Batch:	N/A	Lab File ID:	9990_022.D
Dilution:	220			Initial Weight/Volume:	50 mL
Analysis Date:	10/15/2014 0820			Final Weight/Volume:	200 mL
Prep Date:	10/15/2014 0820			Injection Volume:	5 mL

Analyte	Result (ppb v/v)	Qualifier	MDL	RL
Acetone	1100	U	150	1100
Methylene Chloride	110	U	26	110
Chloroform	290		8.4	44
Carbon tetrachloride	5100		2.4	44

Analyte	Result (ug/m3)	Qualifier	MDL	RL
Acetone	2600	U	360	2600
Methylene Chloride	380	U	92	380
Chloroform	1400		41	210
Carbon tetrachloride	32000		15	280

Client: Ertec

Job Number: 200-24713-1
Sdg Number: 200-24713

Client Sample ID: INLET-7

Lab Sample ID: 200-24713-4
Client Matrix: Air

Date Sampled: 10/09/2014 1317
Date Received: 10/11/2014 1045

TO-15 Volatile Organic Compounds in Ambient Air

Analysis Method:	TO-15	Analysis Batch:	200-78645	Instrument ID:	CHB.i
Prep Method:	Summa Can	Prep Batch:	N/A	Lab File ID:	9990_014.D
Dilution:	4090			Initial Weight/Volume:	60 mL
Analysis Date:	10/14/2014 2132			Final Weight/Volume:	200 mL
Prep Date:	10/14/2014 2132			Injection Volume:	5 mL

Analyte	Result (ppb v/v)	Qualifier	MDL	RL
Acetone	20000	U	2800	20000
Methylene Chloride	2000	U	490	2000
Chloroform	4300		160	820
Carbon tetrachloride	120000		45	820

Analyte	Result (ug/m3)	Qualifier	MDL	RL
Acetone	49000	U	6700	49000
Methylene Chloride	7100	U	1700	7100
Chloroform	21000		760	4000
Carbon tetrachloride	740000		280	5100

Client: Ertec

Job Number: 200-24713-1
Sdg Number: 200-24713

Client Sample ID: **VMW-1-7**

Lab Sample ID: 200-24713-1
Client Matrix: Air

Date Sampled: 10/09/2014 1252
Date Received: 10/11/2014 1045

TO-15 Volatile Organic Compounds in Ambient Air

Analysis Method:	TO-15	Analysis Batch:	200-78645	Instrument ID:	CHB.i
Prep Method:	Summa Can	Prep Batch:	N/A	Lab File ID:	9990_011.D
Dilution:	7610			Initial Weight/Volume:	25 mL
Analysis Date:	10/14/2014 1856			Final Weight/Volume:	200 mL
Prep Date:	10/14/2014 1856			Injection Volume:	5 mL

Analyte	Result (ppb v/v)	Qualifier	MDL	RL
Acetone	38000	U	5300	38000
Methylene Chloride	3800	U	910	3800
Chloroform	4800		290	1500
Carbon tetrachloride	180000		84	1500

Analyte	Result (ug/m3)	Qualifier	MDL	RL
Acetone	90000	U	12000	90000
Methylene Chloride	13000	U	3200	13000
Chloroform	23000		1400	7400
Carbon tetrachloride	1100000		530	9600

Client: Ertec

Job Number: 200-24713-1
Sdg Number: 200-24713

Client Sample ID: **VMW-2-7**

Lab Sample ID: 200-24713-2
Client Matrix: Air

Date Sampled: 10/09/2014 1300
Date Received: 10/11/2014 1045

TO-15 Volatile Organic Compounds in Ambient Air

Analysis Method:	TO-15	Analysis Batch:	200-78645	Instrument ID:	CHB.i
Prep Method:	Summa Can	Prep Batch:	N/A	Lab File ID:	9990_012.D
Dilution:	4580			Initial Weight/Volume:	36 mL
Analysis Date:	10/14/2014 1948			Final Weight/Volume:	200 mL
Prep Date:	10/14/2014 1948			Injection Volume:	5 mL

Analyte	Result (ppb v/v)	Qualifier	MDL	RL
Acetone	23000	U	3200	23000
Methylene Chloride	2300	U	550	2300
Chloroform	5300		170	920
Carbon tetrachloride	130000		50	920

Analyte	Result (ug/m3)	Qualifier	MDL	RL
Acetone	54000	U	7500	54000
Methylene Chloride	8000	U	1900	8000
Chloroform	26000		850	4500
Carbon tetrachloride	840000		320	5800

Client: Ertec

Job Number: 200-24713-1
Sdg Number: 200-24713

Client Sample ID: VMW-3C-7

Lab Sample ID: 200-24713-3
Client Matrix: Air

Date Sampled: 10/09/2014 1309
Date Received: 10/11/2014 1045

TO-15 Volatile Organic Compounds in Ambient Air

Analysis Method:	TO-15	Analysis Batch:	200-78645	Instrument ID:	CHB.i
Prep Method:	Summa Can	Prep Batch:	N/A	Lab File ID:	9990_013.D
Dilution:	3160			Initial Weight/Volume:	58 mL
Analysis Date:	10/14/2014 2040			Final Weight/Volume:	200 mL
Prep Date:	10/14/2014 2040			Injection Volume:	5 mL

Analyte	Result (ppb v/v)	Qualifier	MDL	RL
Acetone	16000	U	2200	16000
Methylene Chloride	1600	U	380	1600
Chloroform	3900		120	630
Carbon tetrachloride	94000		35	630

Analyte	Result (ug/m3)	Qualifier	MDL	RL
Acetone	38000	U	5200	38000
Methylene Chloride	5500	U	1300	5500
Chloroform	19000		590	3100
Carbon tetrachloride	590000		220	4000

ATTACHMENT B

EPA REGION II QUALIFIERS AND THEIR DEFINITIONS

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

N - The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."

NJ - The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.

UJ - The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

R - The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

Eden Environmental, LLC

December 3, 2014

Ms. Wanda Morales
ERTEC
Amur St. A - #5
Reparto Landrau
Río Piedras, PR 00921

RE: Data Validation Report for the SVE TO-15 Air Monitoring of the Pfizer Arecibo Site

Dear Wanda,

Enclosed is the validation report for the air samples collected on November 18, 2014, from the Pfizer Arecibo Site. The following samples were submitted to TestAmerica in Burlington, Vermont and were assigned to Sample Delivery Group (SDG) 200-25479

STACK-8	INLET-8	VMW-1-8
VMW-2-8	VMW-3C-8	SVE-A
TB-111814		

The data package was received on December 2, 2014. The laboratory performed well, and no qualifiers were added by the validator.

All samples were analyzed for acetone, methylene chloride, chloroform, and carbon tetrachloride in conformance with the specifications of the USEPA Compendium Method TO-15. The validation effort was restricted to the reported results and supporting data for these compounds.

Data validation was performed in conformance with the specifications of the EPA Region II Standard Operating Procedure (Volatile Organic Analysis of Ambient Air in Canisters by Method TO-15," SOP HW-31 Revision 4, October, 2006). When necessary, professional judgment was applied and appropriately noted in the applicable section of the attached report. The validation effort for these data has the label Stage 4 Validation Manual (S4VM).

Anomalies detected during the validation effort (if any) are included in the appropriate section of the attached report. The Laboratory Analytical Data Forms with all qualifiers resulting from the validation effort (if any were necessary) are included in Attachment A. The EPA Region II qualifiers and their definitions are included in Attachment B.

If you have any questions regarding this report, please give me a call at 225-355-0163 or contact me by e-mail at engrid@eden-env.com

Kindest Regards,

Engrid Carpenter

Engrid S. Carpenter
President

Eden Environmental, LLC

ANALYTICAL DATA VALIDATION

ERTEC JOB DESCRIPTION – PFIZER ARECIBO – SVE

ERTEC JOB NUMBER –14-5288

ORGANIC ANALYSIS DATA

Prepared by: TestAmerica Laboratory, Burlington Vermont
Sample Delivery Group: 200-25479
Selected Volatile Organic Compounds in Air Samples

VALIDATION REPORT

Prepared by: Eden Environmental, LLC
Eden Project Number 13103

Date: December 3, 2014

13103/ESC/CEW
200-25479-TO-15

Eden Environmental, LLC

INTRODUCTION

The following samples were collected on November 18, 2014, submitted to TestAmerica in Burlington, Vermont, and assigned to Sample Delivery Group (SDG) 200-25479:

STACK-8	INLET-8	VMW-1-8
VMW-2-8	VMW-3C-8	SVE-A
TB-111814		

Data validation was performed in conformance with the specifications of the EPA Region II Standard Operating Procedure (Volatile Organic Analysis of Ambient Air in Canisters by Method TO-15," SOP HW-31 Revision 4, October, 2006). When necessary, professional judgment was applied and appropriately noted in the applicable section of the attached report. The validation effort for these data has the label Stage 4 Validation Manual (S4VM).

Anomalies detected during the validation effort (if any) are included in the appropriate section of the attached report. The Laboratory Analytical Data Forms with all qualifiers resulting from the validation effort (if any were necessary) are included in Attachment A. The EPA Region II qualifiers and their definitions are included in Attachment B.

I. Holding Times, Preservation, and Sample Integrity

All TO-15 analyses were performed within holding time. A copy of the Laboratory Login Sample Receipt Checklist noted that all samples were in good condition with container custody seals intact. A copy of the chain of custody record was also present in the data package and included all of the samples in this data set. Therefore, all requirements for holding times and sample integrity were met. No physical preservation requirements are specified for Summa® canisters.

II. GC/MS Instrument Performance Checks

Results were reported for two bromofluorobenzene (BFB) instrument performance checks. Requirements for both instrument performance checks were met.

III. Calibration

These samples were analyzed on a single gas chromatography/mass spectrometry (GC/MS) system, which was identified as "CHX." No evidence was presented in the data package to indicate that manual integrations were performed on any project-specified target compounds or on any of the internal standards in any of the calibration standards.

A. Initial Calibration (IC) and Initial Calibration Verification (ICV)

IC was established on November 10, 2014. An ICV was analyzed immediately following the IC. EPA Region II-specified acceptance criteria were met for all of these standards.

B. Continuing Verification (CV)

Documentation of a single CV standard was present in the data package. All reported sample analyses were associated with this standard. All criteria were met for this standard.

IV. Blanks

A laboratory blank was analyzed in the analytical sequence containing the site samples. No project-specified target analytes were detected in the laboratory blank.

A trip blank (TB-111814) was submitted blank with the samples in this data set. No project-specified target analytes were detected in TB-111814.

V. Surrogate Recoveries

The use of a surrogate compound is not addressed in Method TO-15. A surrogate compound was not employed in the analyses of these samples.

VI. Laboratory Check Standard (Audit Accuracy Standard)

A 10 ppbv laboratory check standard (identified as LCS) was analyzed in the analytical sequence containing the reported samples. The LCS was spiked with all of the project-specified target analytes. Recoveries of the target analytes in the LCS was within the quality control limits specified by the validation guidance document.

VII. Laboratory Replicate Analyses

STACK-8 was analyzed as a laboratory replicate. Reproducibility between the positively paired results for chloroform and carbon tetrachloride was within the laboratory-specified acceptance limits. Acetone and methylene chloride were not detected in either analysis of this sample; therefore, no further quantitative evaluation of precision could be made from these data.

VIII. Field Duplicates

Collection of true field duplicates is not feasible for air samples; therefore, a better description of these quality control samples would be co-located samples. The validation guidance document does not provide an acceptance criterion for RPDs between reported concentrations in "field duplicate" samples. For the purpose of this validation effort, a maximum acceptance limit of 100 RPD was used to define acceptable agreement between reported results in the co-located samples. Results with RPD values greater than 100 RPD should be used with caution as the concentration and source of these compounds in the reported samples is uncertain.

SVE-A was collected as a co-located sample of INLET-8. Acceptable reproducibility between concentrations reported for chloroform and carbon tetrachloride was observed. Acetone and methylene chloride were not detected in either of these samples; therefore, no further quantitative evaluation of precision could be made from these data.

IX. Internal Standard Performance

The validator confirmed that the areas and retention times of all three internal standards were within the method-specified acceptance limits for the reported site and quality control analyses.

X. Target Compound Identification

When detected, the target analyte was correctly identified with acceptable supporting mass spectral data present in the data package.

XI. Compound Quantitation and Reporting Limits (RLs)

A RL of ≤0.50 ppbv is a required performance criterion for this project. The low concentration standard in the IC was 0.50 ppbv for methylene chloride, 0.20 ppbv for chloroform, and 0.04 ppbv for carbon tetrachloride. The unadjusted RLs are equivalent to or higher than the low concentration standard used to establish the IC and are supported by the reported data.

The low concentration IC standard for acetone was 5.0 ppbv, which is also the RL used for this analyte and supported by the reported data. The RL for acetone does not meet the performance criterion for this project, but does reflect the best efforts of the laboratory.

XII. Tentatively Identified Compounds (TICs)

Library searches were not requested for these samples.

XIII. Documentation

With regard to the chain of custody records,

- The laboratory sample received by signature is illegible.

All of the laboratory sample receipt information was provided on the laboratory-generated Login Sample Receipt Checklist, which confirmed that all samples were properly documented and shipped in custody sealed containers.

A copy of the FedEx airbill was included in the data package to document the transfer of the samples from the field to the laboratory.

The Laboratory Analytical Data Forms also include a column identified as MDL. Unadjusted MDLs for the target compounds are not supported by the data as received. Therefore, it is recommended that the RLs rather than the MDLs be used as the lowest supported limit of detection.

XIV. Overall Assessment

Findings of the validation effort did not result in the qualification of any sample results; the validator did not add any qualifiers to the laboratory reported results.

This validation effort is based on the data as provided by the laboratory. Software manipulation cannot be routinely detected during validation and is outside the scope of this review.

This validation report should be added to the data package for all future distributions of TO-15 data reported in SDG 200-24713.

Eden Environmental, LLC

ATTACHMENT A

LABORATORY ANALYTICAL DATA FORMS

Client: Ertec

Job Number: 200-25479-1
Sdg Number: 200-25479

Client Sample ID: **STACK-8**

Lab Sample ID: 200-25479-6
Client Matrix: Air

Date Sampled: 11/18/2014 1455
Date Received: 11/19/2014 1030

TO-15 Volatile Organic Compounds in Ambient Air

Analysis Method:	TO-15	Analysis Batch:	200-81174	Instrument ID:	CHX.i
Prep Method:	Summa Can	Prep Batch:	N/A	Lab File ID:	10770-009.D
Dilution:	170			Initial Weight/Volume:	20 mL
Analysis Date:	11/25/2014 1639			Final Weight/Volume:	200 mL
Prep Date:	11/25/2014 1639			Injection Volume:	200 mL

Analyte	Result (ppb v/v)	Qualifier	MDL	RL
Acetone	850	U	120	850
Methylene Chloride	85	U	20	85
Chloroform	320		6.5	34
Carbon tetrachloride	5600		1.9	34

Analyte	Result (ug/m3)	Qualifier	MDL	RL
Acetone	2000	U	280	2000
Methylene Chloride	300	U	71	300
Chloroform	1500		32	170
Carbon tetrachloride	35000		12	210

Client: Ertec

Job Number: 200-25479-1
Sdg Number: 200-25479

Client Sample ID: **INLET-8**

Lab Sample ID: 200-25479-4
Client Matrix: Air

Date Sampled: 11/18/2014 1439
Date Received: 11/19/2014 1030

TO-15 Volatile Organic Compounds in Ambient Air

Analysis Method:	TO-15	Analysis Batch:	200-81174	Instrument ID:	CHX.i
Prep Method:	Summa Can	Prep Batch:	N/A	Lab File ID:	10770-014.D
Dilution:	1070			Initial Weight/Volume:	34 mL
Analysis Date:	11/25/2014 2029			Final Weight/Volume:	200 mL
Prep Date:	11/25/2014 2029			Injection Volume:	200 mL

Analyte	Result (ppb v/v)	Qualifier	MDL	RL
Acetone	5400	U	740	5400
Methylene Chloride	540	U	130	540
Chloroform	2300		41	210
Carbon tetrachloride	35000		12	210

Analyte	Result (ug/m3)	Qualifier	MDL	RL
Acetone	13000	U	1800	13000
Methylene Chloride	1900	U	450	1900
Chloroform	11000		200	1000
Carbon tetrachloride	220000		74	1300

Client: Ertec

Job Number: 200-25479-1
Sdg Number: 200-25479

Client Sample ID: VMW-1-8

Lab Sample ID: 200-25479-1
Client Matrix: Air

Date Sampled: 11/18/2014 1406
Date Received: 11/19/2014 1030

TO-15 Volatile Organic Compounds In Ambient Air

Analysis Method:	TO-15	Analysis Batch:	200-81174	Instrument ID:	CHX.i
Prep Method:	Summa Can	Prep Batch:	N/A	Lab File ID:	10770-011.D
Dilution:	1950			Initial Weight/Volume:	29 mL
Analysis Date:	11/25/2014 1811			Final Weight/Volume:	200 mL
Prep Date:	11/25/2014 1811			Injection Volume:	200 mL

Analyte	Result (ppb v/v)	Qualifier	MDL	RL
Acetone	9800	U	1300	9800
Methylene Chloride	980	U	230	980
Chloroform	5600		74	390
Carbon tetrachloride	76000		21	390

Analyte	Result (ug/m3)	Qualifier	MDL	RL
Acetone	23000	U	3200	23000
Methylene Chloride	3400	U	810	3400
Chloroform	27000		360	1900
Carbon tetrachloride	480000		130	2500

Client: Ertec

Job Number: 200-25479-1
Sdg Number: 200-25479

Client Sample ID: VMW-2-8

Lab Sample ID: 200-25479-2
Client Matrix: Air

Date Sampled: 11/18/2014 1417
Date Received: 11/19/2014 1030

TO-15 Volatile Organic Compounds In Ambient Air

Analysis Method:	TO-15	Analysis Batch:	200-81174	Instrument ID:	CHX.i
Prep Method:	Summa Can	Prep Batch:	N/A	Lab File ID:	10770-012.D
Dilution:	1490			Initial Weight/Volume:	51 mL
Analysis Date:	11/25/2014 1857			Final Weight/Volume:	200 mL
Prep Date:	11/25/2014 1857			Injection Volume:	200 mL

Analyte	Result (ppb v/v)	Qualifier	MDL	RL
Acetone	7500	U	1000	7500
Methylene Chloride	750	U	180	750
Chloroform	4200		57	300
Carbon tetrachloride	58000		16	300

Analyte	Result (ug/m3)	Qualifier	MDL	RL
Acetone	18000	U	2400	18000
Methylene Chloride	2600	U	620	2600
Chloroform	21000		280	1500
Carbon tetrachloride	360000		100	1900

Client: Ertec

Job Number: 200-25479-1
Sdg Number: 200-25479

Client Sample ID: **VMW-3C-8**

Lab Sample ID: 200-25479-3
Client Matrix: Air

Date Sampled: 11/18/2014 1428
Date Received: 11/19/2014 1030

TO-15 Volatile Organic Compounds in Ambient Air

Analysis Method:	TO-15	Analysis Batch:	200-81174	Instrument ID:	CHX.i
Prep Method:	Summa Can	Prep Batch:	N/A	Lab File ID:	10770-013.D
Dilution:	1420			Initial Weight/Volume:	38 mL
Analysis Date:	11/25/2014 1943			Final Weight/Volume:	200 mL
Prep Date:	11/25/2014 1943			Injection Volume:	200 mL

Analyte	Result (ppb v/v)	Qualifier	MDL	RL
Acetone	7100	U	980	7100
Methylene Chloride	710	U	170	710
Chloroform	2500		54	280
Carbon tetrachloride	45000		16	280

Analyte	Result (ug/m3)	Qualifier	MDL	RL
Acetone	17000	U	2300	17000
Methylene Chloride	2500	U	590	2500
Chloroform	12000		260	1400
Carbon tetrachloride	280000		98	1800

Client: Ertec

Job Number: 200-25479-1
Sdg Number: 200-25479

Client Sample ID: **SVE-A**

Lab Sample ID: 200-25479-5
Client Matrix: Air

Date Sampled: 11/18/2014 1444
Date Received: 11/19/2014 1030

TO-15 Volatile Organic Compounds in Ambient Air

Analysis Method:	TO-15	Analysis Batch:	200-81174	Instrument ID:	CHX.i
Prep Method:	Summa Can	Prep Batch:	N/A	Lab File ID:	10770-015.D
Dilution:	1450			Initial Weight/Volume:	36 mL
Analysis Date:	11/25/2014 2116			Final Weight/Volume:	200 mL
Prep Date:	11/25/2014 2116			Injection Volume:	200 mL

Analyte	Result (ppb v/v)	Qualifier	MDL	RL
Acetone	7300	U	1000	7300
Methylene Chloride	730	U	170	730
Chloroform	3100		55	290
Carbon tetrachloride	48000		16	290

Analyte	Result (ug/m3)	Qualifier	MDL	RL
Acetone	17000	U	2400	17000
Methylene Chloride	2500	U	600	2500
Chloroform	15000		270	1400
Carbon tetrachloride	300000		100	1800

Client: Ertec

Job Number: 200-25479-1
Sdg Number: 200-25479

Client Sample ID: **TB-111814**

Lab Sample ID: 200-25479-7TB
Client Matrix: Air

Date Sampled: 11/18/2014 0000
Date Received: 11/19/2014 1030

TO-15 Volatile Organic Compounds in Ambient Air

Analysis Method:	TO-15	Analysis Batch:	200-81174	Instrument ID:	CHX.i
Prep Method:	Summa Can	Prep Batch:	N/A	Lab File ID:	10770-008.D
Dilution:	1.0			Initial Weight/Volume:	200 mL
Analysis Date:	11/25/2014 1553			Final Weight/Volume:	200 mL
Prep Date:	11/25/2014 1553			Injection Volume:	200 mL

Analyte	Result (ppb v/v)	Qualifier	MDL	RL
Acetone	5.0	U	0.69	5.0
Methylene Chloride	0.50	U	0.12	0.50
Chloroform	0.20	U	0.038	0.20
Carbon tetrachloride	0.20	U	0.011	0.20

Analyte	Result (ug/m3)	Qualifier	MDL	RL
Acetone	12	U	1.6	12
Methylene Chloride	1.7	U	0.42	1.7
Chloroform	0.98	U	0.19	0.98
Carbon tetrachloride	1.3	U	0.069	1.3

ATTACHMENT B

EPA REGION II QUALIFIERS AND THEIR DEFINITIONS

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

N - The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."

NJ - The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.

UJ - The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

R - The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

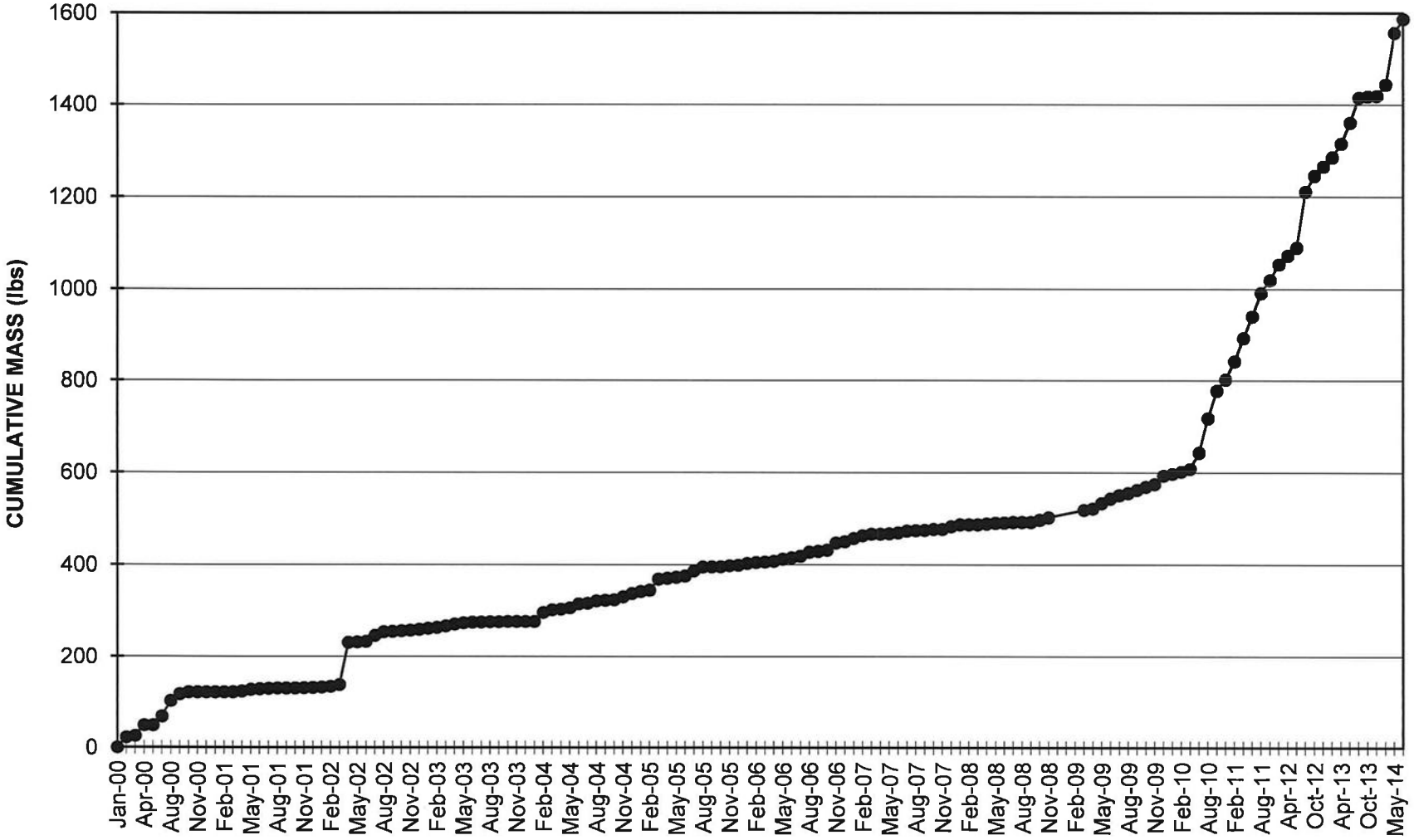
APPENDIX 4

TOTAL VOCs CUMULATIVE MONTHLY EXTRACTION

SVE PULSING OPERATIONS PROGRESS REPORT NO. 8
FEBRUARY TO AUGUST 2014
PFIZER PHARMACEUTICALS LLC
ARECIBO, PUERTO RICO

ERTEC

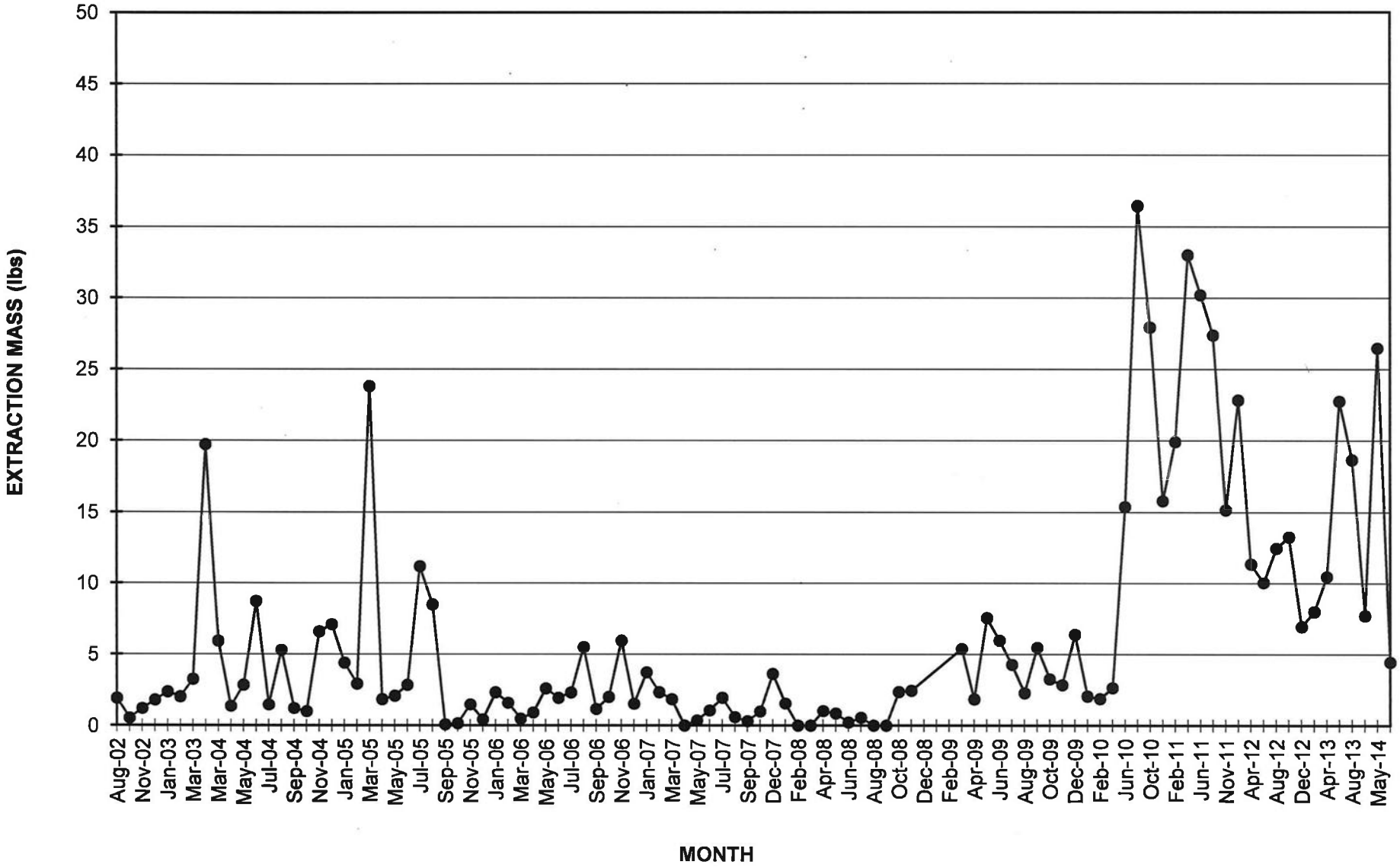
TOTAL VOCs CUMULATIVE MONTHLY EXTRACTION



Pulsing procedures since February 2010. Pulsing on-off periods on 1-month basis from February thru May 2014.
Pulsing on/off periods on 2-months basis from June thru August 2014.

ERTEC

VMW-1 (150 FEET)
TOTAL VOCs MONTHLY EXTRACTION

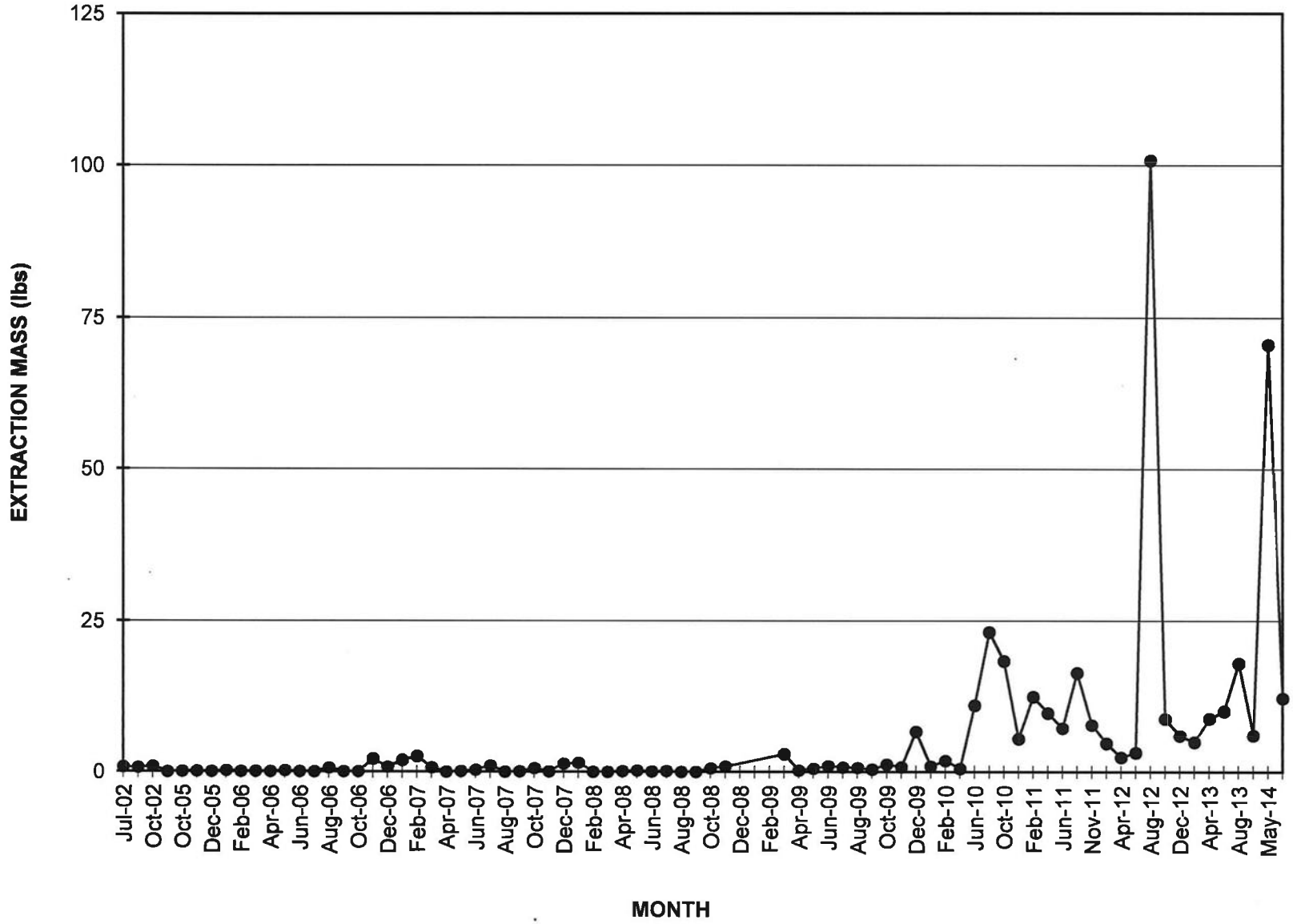


Pulsing procedures since February 2010. Pulsing on-off periods on 1-month basis from February thru May 2014.
Pulsing on/off periods on 2-months basis from June thru August 2014.

ERTEC

D750265c 14-5288

VMW-2 (170 FEET)
TOTAL VOCs MONTHLY EXTRACTION

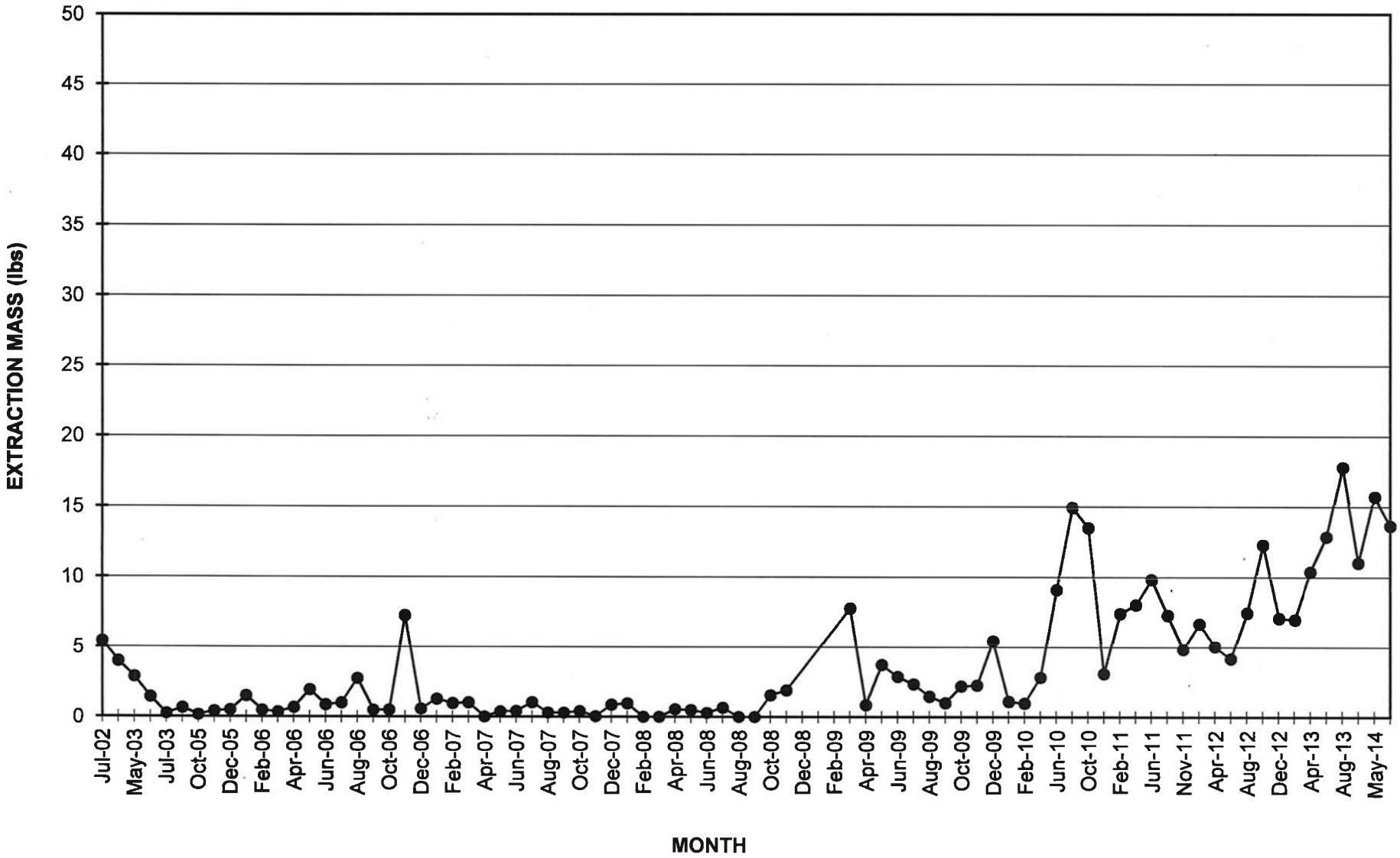


Pulsing procedures since February 2010. Pulsing on-off periods on 1-month basis from February thru May 2014.
Pulsing on/off periods on 2-months basis from June thru August 2014.

ERTEC

D750265d 14-5288

VMW-3C (195 FEET)
TOTAL VOCs MONTHLY EXTRACTION

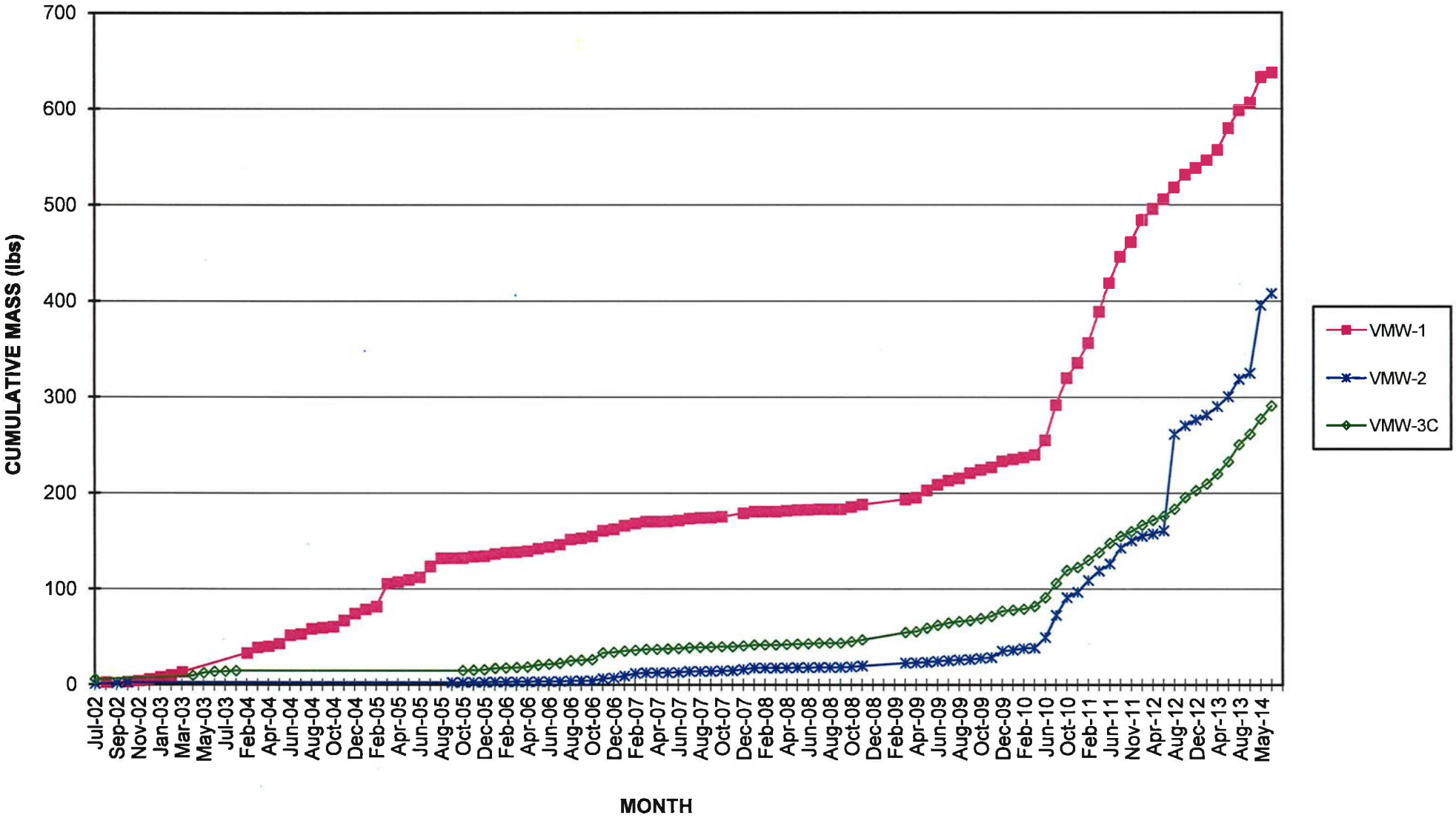


Pulsing procedures since February 2010. Pulsing on-off periods on 1-month basis from February thru May 2014.
Pulsing on/off periods on 2-months basis from June thru August 2014.

ERTEC

D750265e 14-5288

VMW-1 (150 FEET), VMW-2 (170 FEET) AND VMW-3C (195 FEET)
TOTAL VOCs CUMULATIVE EXTRACTION



Pulsing procedures since February 2010. Pulsing on-off periods on 1-month basis from February thru May 2014.
Pulsing on/off periods on 2-months basis from June thru August 2014.

ERTEC

D750265f 14-5288